STATE OF CALIFORNIA

Energy Resources Conservation and Development Commission

In the Matter of: The Application for Certification for the CITY OF RIVERSIDE PUBLIC UTILITIES RIVERSIDE ENERGY RESOURCE CENTER	Docket No. 04-SPPE-1

TESTIMONY OF DR. PHYLLIS FOX AND DR. PETRA PLESS ON BEHALF OF THE CALIFORNIA UNIONS FOR RELIABLE ENERGY

August 13, 2004

EXECUTIVE SUMMARY

The testimony of the California Unions for Reliable Energy consists of three documents.

This first document is the lead testimony, and addresses issues of air quality, noise and cumulative impacts. The testimony is sponsored by Dr. Phyllis Fox (c.v. attached as Exhibit A) and Dr. Petra Pless (c.v. attached as Exhibit B) and begins after this Executive Summary.

The second document is sponsored by Camille Sears. This testimony describes and presents the results of the air quality modeling performed for CURE.

The third document is sponsored by John Baldwin. This testimony describes the various amounts of silt in different portions of the site that would be disturbed.

Together, this testimony provides substantial evidence of a fair argument that there may be numerous significant environmental impacts from this project. These include:

1. The applicant's own analysis and Final Initial Study (which were revised to correct errors we identified in our comments on the Draft Initial Study) now show that, even if the existing air were pristine, constructing the project would violate the 24-hour California Ambient Air Quality Standard for PM10, even without considering the background air quality. This testimony reports this result and, using the applicant's modeling, plots the area of the significant impact.

2. The applicant's own analysis and Final Initial Study now show that when the 24-hour increase in PM10 due to the project is added to the existing background concentration, constructing the project would contribute substantially to an existing violation of the 24-hour California ambient air quality standard. This testimony reports this result.

3. The applicant's own analysis and Final Initial Study now show that when the increase due to the project is added to the existing background concentration, constructing the project would contribute substantially to an existing violation of the annual California ambient air quality standard for PM10. This testimony reports this result and, using the applicant's modeling, plots the area of the significant impact.

4. The project will exceed SCAQMD's Local Significance Threshold for 24-hour PM10 emissions during construction at the nearest residence. The air quality modeling by the applicant and FIS overlooked this significant impact because it plotted the location of that residence in the wrong place. This testimony corrects this mapping error and, otherwise using the applicant's modeling, plots the actual location of the residence.

5. All of the PM10 impacts from construction described above, while significant impacts, were underestimated by the applicant and FIS. We remodeled the PM10 impacts from construction using more a representative estimate of silt content (though still not the worst case) and watering control efficiency, showing the following significant impacts;

    a. The project would violate the 24-hour California Ambient Air Quality Standard, without considering existing background concentrations
    b. The project would contribute substantially to an existing violation of the 24-hour California Ambient Air Quality Standard
    c. The project would contribute substantially to an existing violation of the annual California Ambient Air Quality Standard
    d. The project would exceed the SCAQMD's Local Significance Threshold at the nearest residence

6. Construction of the project would cause a significant increase in NOx and VOCs, both ozone precursors. The emissions are significant whether evaluated against the State CEQA Guidelines or the SCAQMD CEQA Guidelines.

7. The Project will have significant emissions of PM10 during operation. These emission are significant because they exceed the SCAQMD's CEQA daily emission significance threshold

8. The Project will have significant emissions of PM10 during operation. These emission are significant because they violate SCAQMD's SIP rule requiring that the applicant supply valid offsets for annual emissions that exceed 4 tons per year.

9. The Project will have significant emissions of CO from operating the project because they exceed SCQAMD's CEQA daily emission significance threshold.

10. The Project will have significant cumulative construction emissions, when the impacts of the adjacent ongoing wastewater treatment plant Capital Improvement Project are considered.

11. The Project will have significant cumulative impacts from operation when the impacts of the adjacent ongoing wastewater treatment plant Capital Improvement Project are considered and when the buildout of units 3 and 4 are considered.

12. The Project will have significant noise impacts from construction because construction will not occur only during the daytime, the construction noise estimate omitted much of the construction equipment, and other errors were made.

13. The Project will have significant noise impacts from operation because the operation noise estimate omitted some noise sources, the nearest noise receptor was overlooked, and other errors were made. In addition, the Project will have significant cumulative noise impacts.

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I. THE APPLICANT'S OWN ANALYSIS SHOWS THAT CONSTRUCTION AIR QUALITY IMPACTS ARE SIGNIFICANT

A. Constructing The Project Would Violate 24-hour PM10 CAAQS Without Even Considering Existing Violations

The 24-hour PM10 California Ambient Air Quality Standard ("CAAQS") is 50 μg/m^3. (FIS, AQ Table 1, p. 4-6.) This means that any concentration of PM10 above 50 μg/m^3 is unhealthy. This standard applies to ambient air, which is defined as the "portion of the atmosphere, external to building, to which the general public has access." (40 CFR section 50.1(e).)

To correct the errors CURE identified in its comments on the Draft Initial Study ("DIS"), the applicant revised its analysis of air quality impacts.[1] As a result, the ***applicant's own modeling*** shows that project construction would increase 24-hour PM10 concentrations at the fenceline by ***70.4 μg/m^3***. (FIS, AQ Table 19, p. 4-36.) This *increase* alone exceeds the 24-hour PM10 CAAQS. In other words, if the air were completely pristine such that existing background PM10 concentration were *zero*, the project all by itself would cause a violation of the 24-hour CAAQS. Figure 1 in the Sears testimony shows the area in blue in which the ambient concentration of PM10 would increase by at least 50 μg/m^3. This area extends well outside of the boundary of the property on its east side.

By every CEQA authority, this is as significant as an impact can be:

The State CEQA Guidelines provide that emissions are significant if they violate any air quality standard or contribute substantially to an existing or projected air quality violation. (CEQA Guidelines, Appendix G, section III(b).)

The FIS takes an even stronger position. As the FIS explains, the South Coast Air Basin ("SCAB") does not comply with either the federal or

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[1] The applicant recalculated construction emissions and revised its construction air quality modeling, based on comments received from staff and CURE. The applicant's revision *increased* maximum on-site PM10 emissions from 17.2 lb/day (DIS, AQ Table 10, p. 4-23) to 51.6 lb/day. (FIS, AQ Table 10, p. 4-22.) The applicant's revised modeling, which only included on-site emissions, *increased* the maximum worst-case 24-hour PM10 concentration at the fenceline from 17 μg/m^3 (DIS, AQ Table 19, p. 4-33) to 70.4 μg/m^3. (FIS, AQ Table 19, p. 4-36.) The applicant's revised modeling also increased the maximum worst-case annual PM10 concentration at the fenceline from 0.97 μg/m^3 (DIS, AQ Table 19, p. 4-33) to 12.4 μg/m^3. (FIS, AQ Table 19, p. 4-36.)

state ambient air quality standards for PM10 and ozone. (FIS, p.4-7.) Thus, the FIS concludes that *all* emissions of and increases in ambient concentrations of nonattainment pollutants, including their precursors, are significant in its discussion of "Significance Criteria."

> "First, *all* project emissions of nonattainment criteria pollutants and their precursors (NOx, VOC, PM10, and SO_2) are considered to be significant and need to be mitigated to the extent feasible. Second, *any* AAQS violation or *any* contribution to any AAQS violation caused by any project emissions is considered to be significant and must be mitigated to the extent feasible."

(FIS, p. 4-31, emphasis added.)

Thus, even if the applicant's analysis were flawless (which it is not), construction of this project would cause a significant air quality impact.

B. Constructing The Project Would Contribute Substantially To A Violation Of The 24-hour PM10 CAAQS

In addition to showing that constructing the project would cause a violation of the 24-hour PM10 standard even if the existing air were pristine, applicant's analysis and the FIS show that, when the 24-hour increase due to the project is added to the existing background concentration, constructing the project would contribute substantially to an existing violation of the 24-hr California ambient air quality standard.

The CAAQS for 24-hour PM10 concentrations is 50 $\mu g/m^3$. The applicant's modeling indicates that project construction would increase 24-hour PM10 concentrations at the fenceline by 70.4 $\mu g/m^3$. (FIS, AQ Table 19, p. 4-36.) The maximum existing background PM10 concentration in the vicinity of the project is 164 $\mu g/m^3$. (FIS, AQ Table 4, p. 4-11 and AQ Table 19, p. 4-36.) Therefore, the project would contribute substantially to an existing violation of an ambient air quality standard. Based on the FIS, the project would increase this existing violation from 164 $\mu g/m^3$ to 234.4 $\mu g/m^3$, or by 43%. (FIS, AQ Table 19, p. 4-36.)

As stated in the FIS, *all* emissions of nonattainment criteria pollutants are considered to be significant and *any* contribution to any AAQS violation caused by any project emissions is considered to be significant. (FIS, p. 4-31.) A 43% increase in a pollutant that already violates the ambient air quality standard is a significant impact.

C. Constructing The Project Would Contribute Substantially To A Violation Of The Annual PM10 CAAQS

In addition to showing that constructing the project would cause a violation of the 24-hour PM10 standard even if the existing air were pristine, the applicant's analysis and the FIS show that, when the increase due to the project is added to the existing background concentration, constructing the project would contribute substantially to an existing violation of the annual California ambient air quality standard for PM10.

The CAAQS for annual PM10 concentrations is 20 μg/m^3. The applicant's modeling indicates that project construction would increase annual PM10 concentrations at the fenceline by 12.4 μg/m^3. (FIS, AQ Table 19, p. 4-36.) The maximum existing background PM10 concentration in the vicinity of the project is 63.3 μg/m^3. (FIS, AQ Table 4, p. 4-11 and AQ Table 19, p. 4-36.) Therefore, the project would contribute substantially to an existing violation of an ambient air quality standard. Based on the FIS, the project would increase this existing violation from 63.3 μg/m^3 to 75.7 μg/m^3, or by 20%. (FIS, AQ Table 19, p. 4-36.)

As stated in the FIS, *all* emissions of nonattainment criteria pollutants are considered to be significant and *any* contribution to any AAQS violation caused by any project emissions is considered to be significant. (FIS, p. 4-31.) A 20% increase in a pollutant that already violates the ambient air quality standard is a significant impact.

Another way to evaluate the significance of an increase in a pollutant that already exceeds an ambient air quality standard is by comparing it to allowable changes in concentrations in SCAQMD Rule 1303, Table A-2. In fact, the applicant relied on these thresholds in its revised air quality analysis to determine the significance of the increase in annual PM10 concentrations due to construction emissions. However, the applicant incorrectly applied them only at the nearest sensitive receptor. (SCEC 7/29/04,[2] attached as Exhibit C, p. 2.)

These allowable changes represent measurable impacts, taking into account modeling sensitivity. They apply to ambient air, not just sensitive receptors. The threshold for annual PM10 concentrations is 1 μg/m^3. Rule 1303, Table A-2. Project construction would increase the ambient concentration of PM10 by up to 12.4 μg/m^3 at the fenceline. The area outside of the property boundary where the increase is equal to or greater than 1 μg/m^3 is show in red on Figure 2 in the Sears testimony. Therefore,

[2] SCEC, Riverside Energy Resource Center, Revised Construction Emission Inventory and Air Quality Impact Assessment, July 29, 2004 (attached as Exhibit C).

construction of the project would contribute substantially to an existing violation of an ambient air quality standard in the vicinity of the project. Thus, annual PM10 impacts are also significant when measured using this standard.

D. The Final Initial Study Does Not Provide Any Calculation Or Threshold That Shows That PM10 From Construction Is Not Significant

The FIS first states that all emissions of nonattainment criteria pollutants and their precursors are significant and that any ambient air quality standard violation or any contribution to any AAQS is significant. (FIS, p. 4-31.) This is certainly the correct standard for determining the significance of an increase in air pollutants, as it comes directly from the State CEQA Guidelines, Appendix G. Specifically, the FIS correctly identifies the 24-hour PM10 CAAQS as a relevant LORS (FIS, p. 4-2 and AQ Table 1, p. 4-6) and thus a significance criterion for evaluating project impacts under CEQA. (FIS, p. 4-1.) However, the FIS inexplicably ignored this standard in evaluating construction air quality impacts. In its place, it provided no standard at all.

The FIS evaluates the air quality impacts and compares the resulting increases to ambient air quality standards (FIS, AQ Table19) and SCAQMD's localized significance threshold ("LST"). (FIS, p. 4-34.) The FIS acknowledges that the modeled PM10 concentrations exceed the standards. (FIS, p. 4-36: "The construction 24-hour and annual arithmetic PM10 impacts exceed the ambient air quality standards.") This would be a significant impact according to FIS page 4-31. However, rather than conclude that the impacts are significant, based on the fact that AAQSs are exceeded or that all emissions of nonattainment pollutants are significant, the FIS compares the modeled concentrations to the LST of 10.4 $\mu g/m^3$ at the nearest sensitive receptor and concludes that the impacts are not significant with appropriate mitigation.

However, elsewhere, the FIS states that "the LST thresholds, while shown for comparison with the modeling results, are *not* being used as significance criteria for this project." (FIS, p. 4-37, note 4, p. 4-34.) If the FIS is not using the LST threshold of 10.4 ug/m^3 as a significance threshold, then what is the significance threshold that the FIS is relying on? None is provided, except emissions of nonattainment pollutants and violations of or contribution to violations of AAQSs, which the FIS does not ultimately rely on.

Instead, the FIS simply asserts without explanation that, "Staff believes that the construction air quality impacts will be less than significant with the implementation of the mitigation and compliance assurance measures contained in the recommended Conditions of Exemption." (FIS, p. 4-40.) As the Committee stated at the prehearing conference, the Commission acts based on evidence in the record. The FIS provides ***no*** evidence of any calculation that the PM10 emissions from construction will be below any particular standard; and in particular, ***no*** evidence that the emissions will not trigger the FIS's own significance standard: "*any* AAQS violation or *any* contribution to any AAQS violation caused by any project emissions is considered to be significant …." (FIS, p. 4-31, emphasis added.)

As explained more fully in Section V, these significant PM10 impacts are not mitigated by the proposed Conditions of Exemption ("COEs") because the COEs were assumed to be in place when the ambient air quality impacts were modeled. (FIS, p. 4-36, 4-39 ("The applicant's proposed mitigation was included in the modeling analysis as summarized in AIR QUALITY Table 19").) All proposed mitigation measures were either implicitly included, *e.g.,* moisture content of soil, directly specified as control efficiencies and incorporated into the emission calculations, *e.g.*, watering control efficiency, or address emissions that were not included in the emission estimates, *i.e.* runoff and trackout. Because the benefits of this mitigation were already assumed in the calculation of the Project's impacts, they cannot then be "double-counted" as mitigation for those same impacts. In other words, by incorporating these mitigation measures in its air quality impact analysis, the FIS's emission estimates have been adjusted downward. Those same measures cannot be counted again as mitigation for those lower emission estimates because they will not provide any additional air quality benefit. Thus, the emissions in Air Quality Tables 10 and 11 and the air quality impacts in Air Quality Table 19 are already mitigated. The mitigated emission and air quality impacts are significant.

II. IF THE SCAQMD'S LOCAL SIGNIFICANCE THRESHOLD IS USED, THE PM10 EMISSIONS FROM CONSTRUCTION ARE SIGNIFICANT

Although disclaiming its relevance, the FIS evaluated PM10 impacts using a significance threshold recently adopted by the SCAQMD, referred to as Localized Significance Threshold ("LST") methodology. (FIS, p. 4-36.)

The LST policy sets a 24-hour PM10 construction significance threshold of 10.4 μg/m^3 at the nearest receptor. (Ex. D, SCAQMD 6/03,[3] pp.

[3] South Coast Air Quality Management District (SCAQMD), Localized Significance Threshold Methodology, Attachment D, June 2003 (attached as Exhibit D).

1-4, 1-5, 2-10.) Based on the applicant's modeling, the FIS reports that the increased ambient PM10 concentrations at the nearest residence will be 9.3 $\mu g/m^3$, which is less than 10.4 $\mu g/m^3$. (FIS, p. 4-36.) However, the application placed the nearest residence in the wrong location. Further, there are limitations to using the LST methodology to evaluate the significance of construction air quality impacts.

First, the LST threshold does not replace other significance thresholds. The SCAQMD's response to comments on the LST methodology (Ex. D[4]) acknowledges this point by stating, e.g., "Staff … has not identified any inconsistencies with the existing handbook, any Handbook revisions currently under consideration, or work being undertaken by other public agencies." (Ex. D, p. 1.) "Lead agencies currently compare air quality impacts from proposed projects to the regional mass daily significance thresholds. LSTs simply provide another indicator of significance." (Ex. D, p. 2.)

Second, the LST threshold methodology does not address the significance of annual PM10 impacts, nor impacts from other pollutants, as a result of construction.

Third, the LST methodology was developed for sites that are 5 acres or smaller in size. The construction of this Project will disturb 13 acres, *i.e.*, more than twice the maximum project area assumed in the LST methodology. See Applicant's construction emission estimates.[5]

More importantly, even using the LST methodology shows that the emissions of PM10 from construction are significant. The 9.3 $\mu g/m^3$ increase reported by the applicant and the FIS is incorrect because the applicant simply used the wrong location for the nearest sensitive receptor and because PM10 emissions were underestimated. Simply revising the applicant's modeling to use the correct location for the nearest residence shows that the increase in 24-hour PM10 is 10.49 $\mu g/m^3$, which exceeds LST significance threshold. (See Figure 1 in Sears Testimony and accompanying discussion.)

III. CONSTRUCTION EMISSIONS WERE UNDERESTIMATED

[4] Attachment C, Localized Significance Threshold – Key Issues/Comments, July 11, 2003 (attached as Exhibit D).

[5] Applicant provided updated construction emission estimates with file "2248.2201xls3c - Nov.Construction equipment and Emissions -july 25.xls". (See attachment B to Sears Testimony.)

The applicant estimated that the highest construction emissions would occur during the first full month of construction, November 2004, when both site preparation and foundation work would occur. (FIS, p. 4-22.)

In estimating emissions, the applicant made several errors. Correcting some of these errors shows that the significant impacts from construction are even worse than described above.

A. Silt Content Was Underestimated

In our comments on the DIS, we pointed out that the silt content used to estimate fugitive dust emissions, 6.9% to 8.5%, was too low and not representative of site-specific conditions. We recommended the use of a silt content of 28.3% based on notations on the boring logs and trench logs. (See Exhibit E.)

In response, the applicant revised the silt content from 8.5% for travel on unpaved roads and 6.9% for dirt pushing/bulldozing operations and wind erosion to 13.2% for all emissions based on the average of four "soil" sieve results contained in the geotechnical investigation. (FIS, p. 4-24.) However, these samples are bedrock cuttings, not existing soil/fill. Apparently, staff and the applicant assumed these samples were soil because the geotechnical report refers to them as "soil." (Ex. F, LOR[6] 1/04, Appx. C.)

However, the sieve analyses were performed on drill cuttings from augering rock at these boring locations. The samples that were sieved were soil, but they originated from bedrock and represent bedrock, not topsoil/fill. This can be determined by first looking at the sieve results, reported in Exhibit F. (LOR 1/04, Appx. C, p. 3, Enclosure 3.) The "specimen identification" column indicates the samples came from borings 2, 10, 11, and 26 at a depth of 0 to 3 feet. The samples are described as "silty sand and "well graded sand w/silt." (Ex. F, LOR 1/04, Enclosure C-1.) The corresponding boring logs are included in Exhibit F (LOR 1/04,Appx. C.) These logs indicate the material in the 0-3 foot horizon is bedrock. The sampling methods indicated on these logs in the "sample type" column would produce rock, not silty sandy and well graded sand. Thus, the sieve analyses were performed on auger drill cuttings.

The laboratory test results state that "soil samples were obtained at probable pavement subgrade level[7] and sieve analysis and sand equivalent

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[6] LOR Geotechnical Group, Inc., Geotechnical Investigation, Acorn Generating Project, Northern Terminus of Acorn Street, Riverside, California, Project No. 61833.1, January 21, 2004 (attached as Exhibit F).

[7] Subgrade is the in-situ material upon which the foundation of a road or railway is placed.

tests were conducted." (Ex. F: LOR 1/04, Appx. C.) Thus, they were part of the preliminary determination of the suitability of the subgrade material for pavement construction at the site, not to determine the silt content for purposes of determining fugitive dust emissions from earth moving at the site. (Ex. F, LOR 1/04, pp. 28 to 29.)

These sieve results are inappropriate for existing topsoil/fill at the site because they are drill cuttings from bedrock. As the FIS accurately points out, "[i]t is clear from the bore logs in the geotechnical investigation and the additional subsurface analysis … that the surface soils are finer grained on average than lower soil/rock layers." (FIS, p. 4-24.) Therefore, using a silt content based on drilling bedrock considerably underestimates the silt content of topsoil/fill and consequently fugitive dust emissions during earth moving and grading at the site.

We previously recommended using an average silt content of 28.3% derived from visual estimates recorded in logs from six borings from the geotechnical investigation and logs from 33 trenches from an additional subsurface analysis. (Ex. F, LOR 05/04[8].) The FIS contends that these silt content values "are completely inappropriate for the determination of the USEPA defined silt content" because they were based on visual determinations only. (FIS, p. 4-24.) The FIS further claims that the "silt content as it is defined for use in the various fugitive dust emission factor equations is based on a physical analysis of the soil. Simply stated, it is the fraction of the soil that passes through a standard 200 mesh sieve. This definition is clearly identified in EPA AP-42 Appendix C.2." (FIS, p. 4-24.) We disagree with Staff's interpretation for four reasons.

1. AP-42 Appendix C Methods Are Inappropriate

First, the equations used by the applicant that contain silt content as a variable were taken from the SCAQMD's CEQA Air Quality Handbook, Appendix to Chapter 9, Information for PM10 Emissions from Fugitive Dust Created During Construction and Operation of the Project. They were not taken from AP-42. This appendix does not instruct the user to rely only on silt content from AP-42, Appendix C. In fact, this reference includes default silt content values to be used if site-specific information is not available.

The equations used by the applicant from the SCAQMD Handbook to determine fugitive dust emissions from on-site vehicle travel on unpaved roads, dirt pushing/bulldozing operations, and wind erosion are similar to

[8] LOR Geotechnical Group, Inc., Results of Additional Subsurface Analysis, Acorn Generation Project, Riverside, Project No. 61833.12, California, May 21, 2004 (attached as Exhibit F).

those in AP-42 and were likely derived from the AP-42 factors. However, even the AP-42 equations do not require a physical analysis of the soil according to U.S. EPA's AP-42, Appendix C.2, as suggested by the FIS. In fact, these equations allow the use of tabulated generic data in case site-specific data are not available.

The applicant's initial construction emission estimates used tabulated average silt content values for bulldozing overburden at western surface coal mines found in U.S. EPA's AP-42, Section 11.9[9] and for construction sites found in U.S. EPA's AP-42, Section 13.2.2[10]. The DIS did not contest the use of these generic values nor has the CEC contested the use of similar generic silt content values in other siting cases. However, these default silt values are not appropriate when site-specific silt content data are available.

Second, the methods in U.S. EPA's Appendix C.1 (Ex. G)[11] (sample collection) and Appendix C.2 (Ex. G)[12] (sample analysis) apply to the determination of surface silt loading collected from paved and unpaved roads, which may be appropriate to determine emissions from travel on unpaved roads, but not to determine soil/fill silt content for bulldozing/earthmoving operations and wind erosion.

Third, the geotechnical report contains no indication that the sieve samples the applicant relied on were collected according to EPA's Appendix C.1, which is the prerequisite for analyzing a sample according to Appendix C.2. In fact, the geotechnical report indicates that samples were apparently drill cuttings from augering the bore holes. (Ex. F, LOR 1/04, Appx. B, p. 1) U.S. EPA's AP-42, Appendix C.1 requires sweeping of unpaved and sweeping or vacuuming paved roads, respectively. (See Exhibit G.)

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[9] United States Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Section 11.9 Western Surface Coal Mining, January 1995 (attached as Exhibit G).

[10] United States Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Section 13.2.2 Unpaved Roads, December 2003 (attached as Exhibit G).

[11] United States Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Appendix C.1, Procedures for Laboratory Analysis Of Surface/Bulk Dust Loading Samples, July 1993 (attached as Exhibit G).

[12] United States Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources, Appendix C.2, Procedures for Sampling Surface/Bulk Dust Loading, July 1993 (attached as Exhibit G).

2. Visual Observation Is Accurate

As discussed in the expert testimony of John Baldwin, the silt content of soil samples can be determined to within 5% to 10% by visual observation by experienced geotechnical engineers and geologists. A visually estimated silt content of the topsoil/fill from the site is more appropriate for calculations of fugitive dust emissions than a sieve analysis of bedrock drill cutting or a default value that has no relationship whatsoever to the site.

3. Revised Silt Content

The silt content used to calculate construction emissions depends on whether bedrock is being ripped, soil is being excavated, or some combination of the two, occurs on the maximum emission day. The FIS and the application do not contain sufficient information to determine which of these scenarios would occur on the maximum emission day. A grading plan and a detailed construction schedule would be required to determine the relative amounts of each material that would be handled on the maximum day. These are not available. Thus, we have estimated emissions for three cases to bound construction PM10 emissions.

Case 1 assumes that only bedrock is being ripped. This corresponds to the applicant's analysis and is based on a silt content of 13.2%. Case 2 assumes that only existing topsoil/fill is being excavated and hauled. The silt content for Case 2 is 28%, based on visual observations noted on the trench and boring logs. Visual observation is accurate to within plus or minus 10%. (Baldwin Testimony.) Thus, the range in average silt content could be 18% to 38%. We analyzed the middle of this range or 28%.

Case 3 assumes that bedrock is being ripped and soil is being excavated on the same day. We estimated the silt content for Case 3 by weighting the bedrock and soil/fill silt contents in Cases 1 and 2 by the total volume of each material that would potentially be handled during site preparation. This volume was roughly estimated, using the information in the geotechnical reports, because we do not have the site grading plan.

The southern portion of the site has more soil/fill than the northern portion. About 2 acres of the southern portion of the site has an average depth of soil of about 3 feet (ranging from 1 to 8 feet thick). The bedrock in this area appears to be more weathered than in the northern portion of the site. Therefore, we assumed than an average of 3 feet of soil/fill and 2 feet of bedrock would be removed from an area of about 2 acres. Thus, about 10,600 cubic yards of soil/fill and about 7,000 cubic yards of bedrock would be handled in the southern portion of the site.

The northern portion of the site contains less soil/fill and the bedrock is generally hard at 1 foot below grade. We assumed that the top 1 foot of soil/fill and top 1 foot of bedrock would be removed from an area of about 9 acres. Thus, about 14,800 cubic yards of soil/fill and 14,800 cubic yards of bedrock would be removed from an area of about 9 acres.

A total of 25,400 cubic yards of soil/fill and 21,800 cubic yards of bedrock would potentially be handled, or about 54% soil/fill and 46% bedrock. The volume-weighted silt content is 21%, assuming 28% silt in the soil/fill and 13.2% silt in the bedrock. These calculations assume that the entire site is prepared according to the geotechnical reports, that the same topography currently present on the site would be maintained, and that the excavated materials would be exported. However, if the site is leveled by moving the soil/fill and bedrock from the southern end to the northern end and importing an unknown quantity of engineered fill, the relative amount of soil/fill that is handled would increase, increasing the volume-weighted silt content.

We estimated PM10 emissions corresponding to these three cases in Section III.E.

B. Watering Control Efficiency Was Overestimated

The applicant revised the watering control efficiency for travel on unpaved roads from 90% assumed in the DIS to 85% in the FIS. The FIS acknowledges that this efficiency is "on the high end of scale recommended for use in the SCAQMD CEQA Handbook" but it "believes that using the high end of the scale is reasonable due to the conservative assumptions, such as soil silt content, being used in the fugitive dust emission calculations and due to the project being required to have an on-site air quality construction mitigation manager, who will be responsible to ensure that the watering frequency is adequate to maintain maximum feasible fugitive dust control." (FIS, p. 4-24.) We disagree.

First, the assumptions used to estimate fugitive PM10 emissions were not conservative, as we discuss in this section. The silt content was too low. The amount of material handled was underestimated. In addition, breakage and winnowing of soils along haul roads would increase silt content compared to undisturbed soil. This was not considered in the applicant's calculations.

Second, as previously discussed in CURE Data Requests Set 4, the SCAQMD CEQA Handbook[13] emphasizes that "[u]nless justified, the low end

[13] South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993.

of the range should be used. Planners can use the favorable factors identified in Appendix 11 to justify a higher rate of efficiency." (SCAQMD 04/93 (Exhibit H), pp. 11-7 through 11-16.) Appendix 11 proceeds to define these "favorable factors" as the use of non-toxic chemical stabilizers formulated for use on unpaved surfaces and further instructs the user to "[u]se the lowest value if better information is not known. If higher than lowest value is used, please provide the supporting analysis and data in the environmental documentation." (SCAQMD 04/93 (Exhibit H), p. A-11-78.) The FIS does not require the use of dust palliatives in its proposed mitigation measures yet accepts that the high end of the recommended control efficiency can be achieved by watering alone. We disagree.

Third, review of recent literature indicates that removal efficiency depends on the size of water droplet created by the nozzles on the water truck and the wind velocity, which are difficult to control in a field setting. The droplets from a water truck are susceptible to crosswinds. If cross winds exceed about 16 mph, the control efficiency is significantly reduced due to dispersal of water droplets. (Ex. I[14])

C. Handled Soil/Fill Was Underestimated

The applicant's emission estimates for dirt loading/piling assume that 120,000 pounds of "dirt," or 12 truck loads, will be handled per day for a total of 5,400,000 pounds over 45 days of grading/earthmoving operations. This volume of material appears to be unrealistically low.

The geotechnical report recommends removing "all existing uncontrolled and/or undocumented fills and the loose, weathered portions of the igneous bedrock under any proposed flatwork and paved areas" and to replace it with engineered fill. (Ex. F: LOR 01/04, p. 20.) We estimated in Section III.A.3 that about 25,400 cubic yards of soil/fill and 21,800 cubic yards of bedrock would have to be removed to comply with this recommendation assuming the entire site is prepared. The Applicant's construction emission estimates[15] indicate that construction of the project will disturb 13 acres, or essentially the entire site.

However, the geotechnical reports assume that four turbines and ancillary facilities would be located on the site. The project includes only two

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[14] John A. Gambatese and David E. James, Dust Suppression Using Truck-Mounted Water Spray System, Journal of Construction Engineering and Management, January/February 2001, pp. 53-59. (Attached as Exhibit I.)

[15] Applicant provided updated construction emission estimates with file "2248.2201xls3c - Nov.Construction equipment and Emissions -July 25.xls". (Attached as Exhibit B to Sears Testimony.)

turbines at this time. Thus, it is possible that only a portion of the site would be fully prepared for foundations. If we assume that only half of the site is prepared for the project, about 76,325,000 pounds of material would have to be handled, assuming a dry density of 105 lb/ft^3 for the fill/soil and 137 lb/ft^3 for the bedrock. (Ex. F, LOR 1/04, Appx. C.) Assuming that this material is handled over the same 45 days assumed by the applicant, an average of about 1.7 million pounds of material would be handled, or substantially more than assumed in the PM10 emission calculations. The impact of this increase in amount of material handled on PM10 emissions is discussed in Section III.E.

D. Hours of Operation Were Underestimated

The construction emissions in the FIS are based on an 8-hour day. (FIS, p. 4-25.) These emissions were correctly modeled from 7 a.m. through 6 p.m. in November, *i.e.* for a duration of 11 hours. However, the emissions reported in Table 10 are only based on an 8 hour day. The maximum daily emissions are about 37% higher because emissions linearly increase as hours of operation increase. (FIS, p. 4-25.) Therefore, the FIS underestimates the amount of emissions that must be mitigated.

E. Wind Speed Underestimated

The earth loading fugitive emissions in the FIS were calculated assuming an average wind speed of 4.24 mph. (FIS, AQ Table 10.) However, the meteorology data used to model the project's air quality impacts indicates that the highest 12-hour

F. Revised Construction PM10 Emissions Are Significant

The above discussion indicates that the FIS underestimated construction emissions. The emissions from constructing this project are even more significant than suggested by the FIS because the silt content and quantity of material handled were underestimated, the water control efficiency was overestimated, the hours of operation were underestimated and wind speed was underestimated. We revised the on-site construction emissions to determine the impact of the first two factors on emissions and ambient concentrations of PM10. We only report the increase in PM10 from on-site activities because the air dispersion modeling is based only on on-site PM10 emissions. However, the emissions from off-site activities would also increase, exceeding SCAQMD CEQA emission significance thresholds. (SCAQMD 4/93[16].)

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[16] South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993. Ex. H.

Accurately estimating emissions requires understanding the various activities during construction. Site preparation work includes grading, excavation of footings and foundations, and backfilling operations. (FIS, p. 4-21.) The geotechnical reports indicate that all existing loose fill materials and the upper weathered bedrock would be removed from areas to receive engineered compacted fill. (Ex. F, LOR 1/21/04, Transmittal Letter, p. 20) Engineered backfill, likely aggregate of 0.75 to 1.5 inches in diameter, would be imported. (FIS, p. 4-25; Response to CURE Data Request 70.) The fill would be spread in maximum 8 inch loose lifts to at least 24 inches beneath all footings. Each lift would be brought to near optimum moisture content and compacted to a relative compaction of at least 90%. The on-site soils should provide adequate quality fill material. (Ex. F, LOR 1/21/04, p. 22.) Thus, three types of material will be handled: (1) existing on-site soils; (2) ripped bedrock; and (3) imported gravel fill. The properties, e.g., silt content, moisture content, of each of these materials are distinct. We assume that only the first two materials would be handled on the maximum day.

The silt content used to calculate construction emissions depends on whether bedrock is being ripped, soil is being excavated, or some combination of the two, occurs on the maximum emission day. The FIS and the Application do not contain sufficient information to determine which of these scenarios would occur on the maximum emission day. A grading plan and a detailed construction schedule would be required to determine the relative amounts of each material that would be handled on the maximum day. These are not available. Thus, we have estimated emissions for three cases to bound construction PM10 emissions. The three cases are described above in Section III.A.3.

The revised on-site PM10 emissions are summarized in Table 1.[17]

Table 1
On-Site PM10 Construction Emissions

		ON-SITE PM10 CONSTRUCTION EMISSIONS (lb/day)	
	Silt Content	120,000 lb/day Material Handled	1,700,000 lb/day Material Handled
Case 1	13.2%	51.6	105.9
Case 2	28%	126.9	206.9
Case 3	21%	88.8	156.6

This table shows that on-site construction PM10 emissions on the maximum day would increase from 51.6 lb/day (FIS, AQ Table 10, p. 4-22) to 206.9 lb/day, assuming that 1.7 million pounds of soil and overburden are handled on the maximum day with a silt content of 28%. Thus, the FIS underestimated construction PM10 emissions and attendant air quality impacts by over a factor of four. The revised emissions and air quality impacts are significant.

Case 3 was modeled, which assumes that a 54%/46% blend of soil and bedrock is handled on the maximum day with an average silt content of 21%, but otherwise using the applicant's assumptions. (Sears Testimony.) The results for 24-hour PM10 are shown on Figure 3 in the Sears testimony, which plots the 50 $\mu g/m^3$ isopleth (blue) and the 10.4 $\mu g/m^3$ isopleth (red). This figure shows regions where the construction 24-hour PM10 impacts exceed the CAAQS of 50 $\mu g/m^3$ and the SCAQMD LST of 10.4 $\mu g/m^3$. The increase in 24-hour PM10 at the nearest residence is 17.9 $\mu g/m^3$, which is about 72% higher than the LST threshold of 10.4 $\mu g/m^3$. These are significant air quality impacts.

The results for annual PM10 are shown on Figure 3 of the Sears testimony, which plots the 1 $\mu g/m^3$ isopleth. This figure shows regions where the SCAQMD 1 $\mu g/m^3$ significance threshold is exceeded. The project would significantly contribute to existing violations of the annual PM10 standard in this region, which covers a large area around the facility. The increase in annual PM10 at the nearest residence is 1.43 $\mu g/m^3$. The maximum increase in annual PM10 is 21 $\mu g/m^3$. (Sears Testimony.) Thus, the project alone

[17] See zip file attached as Exhibit J.

would cause a violation of the annual PM10 CAAQS. These are significant impacts.

IV. INCREASE IN OZONE PRECURSOR EMISSIONS FROM CONSTRUCTION IS SIGNIFICANT

The South Coast Air Basin does not comply with either the federal or state ambient air quality standards for ozone. In fact, it is designated as "extreme" nonattainment for the federal 8-hour ozone standard, the worst possible designation. The FIS states that all emissions of and increases in ambient concentrations of nonattainment pollutants, including their precursors, are significant in the discussion of "Significance Criteria." (FIS, p. 4-31.) Nitrogen oxides ("NOx") and volatile organic compounds ("VOCs") are ozone precursors. (FIS, pp. 4-44 to 4-45.)

However, in the section on "Construction Impacts," the FIS is silent on ozone and its precursors, concluding that all construction air quality impacts will be less than significant if the proposed mitigation measures are adopted, without performing any analysis at all for ozone and its precursors. (FIS, pp. 4-36 to 4-40.) The estimated emissions of ozone precursors during project construction are significant for two reasons.

First, the FIS itself concludes that *any* increase in emissions of a nonattainment pollutant or its precursors is significant. (FIS, p. 4-31.) Both NOx and VOC are ozone precursors. Because the FIS only mitigates these emissions to what it claims to be " the maximum feasible extent," (FIS, p. 4-31), mitigated NOx emissions in the FIS are 129.45 lb/day and the mitigated VOC emissions are 14.02 lb/day. Therefore, mitigated emissions of NOx and VOC remain significant because they are not zero.

Second, the FIS indicates that the emissions of NOx would be 129.45 lb/day. (FIS, AQ Table 10.) The FIS evaluates the significance of the resulting increase in ambient NO_2 concentration. However, the FIS makes no attempt to evaluate the impact of these emissions on ambient ozone. The SCAQMD is the agency responsible for bringing the SCAB into compliance with ozone standards. The SCAQMD has published CEQA significance thresholds designed to achieve compliance with ozone standards. (SCAQMD 4/93 (Exhibit H), pp. 6-1 to 6-4.) The construction NOx emissions exceed the SCAQMD's significance threshold of 100 lb/day and thus are significant.

The FIS claims that the CEC does not use the SCAQMD emission significance thresholds because they are local and thus would not provide a consistent basis for statewide analysis. (FIS, p. 4-37.) This is incorrect.

First, even if the CEC does not use SCAQMD thresholds, this does not authorize the CEC to totally fail to analyze ozone impacts, as both the applicant and the FIS have done.

Second, the SCAQMD is the expert agency for purposes of ozone impacts in the South Coast Air Basin. The SCAQMD's CEQA Guidelines, which have been formally adopted by its Governing Board, should be accorded strong consideration.

Finally, as the CEC has established in numerous prior cases, CEQA requires that local impacts be evaluated. The thresholds in SCAQMD's CEQA guidelines address the specific problems in the South Coast. They are based specifically on the requirements in the Clean Air Act, Section 182(e), for areas classified as being in extreme nonattainment with ozone standards. Thus, they are a valid basis for evaluating the impacts of construction emissions on ozone precursors in the SCAB.

Based on the thresholds adopted by the SCAQMD, the project's emissions of NOx during construction will result in a significant ozone air quality impact. These impacts would be even larger than suggest by the construction emission estimates in the FIS if the errors discussed in Sections III.C and III.D were addressed.

V. THE PROPOSED CONSTRUCTION MITIGATION MEASURES DO NOT REDUCE IMPACTS TO LESS THAN SIGNIFICANT

The analysis presented in the FIS indicates that PM10 and NOx emissions from constructing the Project would result in significant air quality impacts. See Sections I and II of this testimony. The FIS concludes that with the mitigation proposed in the FIS, construction emission impacts would be less than significant. (FIS, pp. 4-36 to 4-40, pp. 4-54 to 4-57.) However, the FIS is double counting the effect of these measures because they were already explicitly included in estimating the emissions and in the modeling in the FIS.

As we previously pointed out in our comments on the Draft Initial Study ("DIS"), all of the proposed measures were either included in the emission estimates, implicitly or as specified control efficiencies, or address emission sources that were not included in the emission estimates. The applicant's calculations represent mitigated emission estimates and therefore modeled ambient air concentrations already take into account all of the proposed mitigation measures. In other words, the proposed mitigation measures do not have the potential to *additionally* reduce the significant emissions and pollutant concentrations to a less-than-significant level

because they are already incorporated into the emission estimates. The following Table (Efficacy of Proposed Mitigation Measures to Reduce Emission Estimates Presented in FIS) summarizes the following discussion of mitigation measures and addresses the reasons why none of the proposed mitigation measures will further reduce emissions reported in the FIS and modeled to estimate ambient air quality impacts.

Table 1:
Efficacy of Proposed Mitigation Measures to Reduce Emission Estimates Presented in FIS

Mitigation Measures****	Potential Emission Reduction Efficiency	Type of Emission	Potential to Additionally Mitigate Estimated Construction Emissions and Ambient Air Quality Modeling Results Presented in RERC SPPE FIS	
			Applicability	Reason
Mitigation Measure AQ-C1	**Fugitive Dust PM10 and Combustion Exhaust**			
The project owner shall provide an air quality construction mitigation plan (AQCMP), for approval, which shows the steps that will be taken, and reporting requirements, to ensure compliance with conditions AQ-C3 through AQ-C5.		Fugitive dust and combustion exhaust	N/A	Ensures compliance with AQ-C3 through AQ-C5.
Mitigation Measure AQ-C2	**Fugitive Dust PM10 and Combustion Exhaust**			
The project owner shall designate and retain an on-site Air Quality Construction Mitigation Manager (AQCMM) who shall be responsible for directing and documenting compliance with conditions AQ-C3 through AQ-C5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more air quality construction mitigation monitors. The AQCMM shall have full access to areas of construction of the project site and linear facilities. The AQCMM may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the CPM.		Fugitive dust and combustion exhaust	N/A	Ensures compliance with AQ-C3 through AQ-C5.
Mitigation Measure AQ-C3	**Fugitive Dust PM10**			
a) All unpaved roads and disturbed areas in the project and linear construction sites shall be watered until sufficiently wet. The frequency of watering can be reduced or eliminated during periods of precipitation.	45%-85%* (unpaved roads) 34%-68%* (disturbed areas)	Vehicle travel on unpaved roads and fugitive dust emissions from dirt pushing/bulldozing and dirt loading/handling	NO	Paved roads: Applicant's emissions estimate already assumes 85 percent control efficiency for fugitive dust emissions from unpaved roads through watering (see calculations of "On-site Vehicle Travel on Unpaved Roads" in spreadsheet 'Site Fugitive November Earthmov'); Dirt pushing/bulldozing and dirt loading/handling: Applicant's emissions estimate already includes watering control efficiency because of the selection of 15 percent moisture for the soil (see calculations of "Dirt Pushing/Bulldozing Operations" and "Dirt Loading/Handling" in spreadsheet 'Site Fugitive November Earthmov').
b) No vehicle shall exceed 10 miles per hour within the construction site.	40%-70%*	Vehicle travel and grading equipment	NO	Applicant's emissions estimate already assumes vehicle speed on site of equal to or less than 10 mph (see calculations of "On-site Vehicle Travel on Unpaved Roads" in spreadsheet 'Site Fugitive November Earthmov').
c) The construction site entrances shall be posted with visible speed limit signs.	NQ	Vehicle travel and grading equipment	N/A	
d) All construction equipment vehicle tires shall be washed or cleaned free of dirt prior to entering paved roadways.	40%-70%*	Trackout	NO	Applicant's emissions estimate does not include trackout.
e) Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.	NQ	Trackout	NO	Applicant's emissions estimate does not include trackout.
f) All entrances to the construction site shall be graveled or treated with water or dust soil stabilization compounds.	NQ	Trackout	NO	Applicant's emissions estimate does not include trackout.
g) No construction vehicles can enter the construction site unless through the treated entrance roadways.	NQ	Trackout	N/A	Applicant's emissions estimate does not include trackout.
h) Construction areas adjacent to any paved roadway shall be provided with sandbags to prevent run-off to the roadway.	50%**	Runoff	NO	Applicant's emissions estimate does not include runoff.
i) All paved roads within the construction site shall be swept twice daily when construction activity occurs.	25%-60%*	Vehicle travel on on-site paved roads	NO	Applicant's emissions estimate does not include emissions from onsite paved roads.

Mitigation Measures****	Potential Emission Reduction Efficiency	Type of Emission	Potential to Additionally Mitigate Estimated Construction Emissions and Ambient Air Quality Modeling Results Presented in RERC SPPE FIS	
			Applicability	Reason
j) At least the first 500 feet of any public roadway exiting from the construction site shall be swept twice daily on days when construction activity occurs, and twice daily on any other day when dirt or runoff from the construction site is visible on the public roadways.	25%-60%*	Trackout and runoff	NO	Applicant's emissions estimate does not include trackout or runoff.
k) All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or be treated with appropriate dust suppressant compounds.	30%-74%*	Wind erosion	NO	While this measure mitigates emissions from disturbed areas and storage piles, it does not provide emission reduction for maximum daily emissions during the time the disturbed areas and storage piles are not covered or treated with dust suppressant compounds.
l) All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.	7%-14%*	Fugitive dust emissions from loaded truck during transportation	NO	Applicant's emission estimate does not include fugitive dust emissions from uncovered trucks during transportation.
m) Wind erosion control techniques, such as windbreaks, water, chemical dust suppressants, and vegetation shall be used on all construction areas that may be disturbed. Any windbreaks used shall remain in place until the soil is stabilized or permanently covered with vegetation.	34%-68%* (disturbed areas)	Wind erosion	NO	Applicant's emissions estimate for fugitive dust emissions from wind erosion already include a control efficiency of 68 percent (see calculations of "Wind Erosion" in spreadsheet 'Site Fugitive November Earthmov').
n) Any construction activities that may cause fugitive dust in excess of the visible emission limits specified in Condition AQ-C4 shall cease when the wind exceeds 25 miles per hour unless water, chemical dust suppressants, or other measures have been applied to reduce dust to the limits set forth in AQ-C4.	NQ	Wind erosion	NO	The "unless water ... [has] been applied" condition negates the applicability of this mitigation measure for reducing emissions calculated by the Applicant; further, the Applicant's construction emission estimates are based on typical wind speeds.
	Combustion Exhaust			
o) Diesel Fired Engines				
1) All diesel-fueled engines used in the construction of the facility shall be fueled only with ultra-low sulfur diesel, which contains no more than 15 ppm sulfur.	Tier I PM10 emission factor ("EFPM10"), which is based on 3300 ppm sulfur content, reduced according to Equation 5 in EPA NR-009b, p. 17	Combustion exhaust	NO	Applicant's emissions estimate of diesel exhaust PM10 already includes an adjustment factor to account for ULSD sulfur content of 15 ppm (see column P in worksheet 'Site Comb. Nov. Grading Phase' titled "Adjustment (3) PM10 Fuel S"). Applicant's emissions estimate of diesel exhaust SOx is also already based on 15 ppm sulfur content (*see* calculations of SOx emission factor column H in worksheet 'Site Comb. Nov. Grading Phase').
2) All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM that shows the engine meets the conditions set forth herein.	N/A	Combustion exhaust	N/A	
3) All large construction diesel engines, which have a rating of 50 hp or more, shall meet, at a minimum, the Tier 1 ARB/EPA certified standards for off-road equipment unless certified by the on-site AQCMM that a certified engine is not available for a particular item of equipment. All large construction diesel engines, which have a rating of 50 hp or more, where a Tier 1 or better ARB/EPA certified engine was not available shall be equipped with catalyzed diesel particulate filters (soot filters), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for the specific engine types.	particulate filter: >90% PM10***	Onsite construction equipment combustion exhaust	NO	Applicant's emissions estimate already assumes Tier I off-road construction equipment.
4) Equipment will be properly maintained in accordance with manufacturer guidelines	N/A	Onsite combustion exhaust	NO	Applicant's emissions estimate already assumes typical fuel consumption and emission factors.
5) Engine idling for all onroad and off-road diesel-fueled equipment shall be limited to no more than 10 minutes, as practical.	NQ	Onsite idling	NO	Applicant's emissions estimate does not include idling emissions.
Where mitigation measures identical to or similar to those provided in (a) through (n) are required in District Rule 403, the most stringent requirement shall apply and be identified in the AQCMP; except when the requirements listed in (a) through (n) would conflict with the implementation and compliance with a District rule requirement. Any conflict between mitigation measures (a) through (n) and District Rule 403 will be identified in the AQCMP.				

Mitigation Measures****	Potential Emission Reduction Efficiency	Type of Emission	Potential to Additionally Mitigate Estimated Construction Emissions and Ambient Air Quality Modeling Results Presented in RERC SPPE FIS	
			Applicability	Reason
Mitigation Measure AQ-C4	**Fugitive Dust PM10**			
The AQCMM, or the air quality construction mitigation monitors, shall continuously monitor the construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (1) off the project site or (2) 200 feet beyond the centerline of the construction of linear facilities or (3) within 100 feet upwind of any regularly occupied structures not owned by the project owner indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed: Step 1: The AQCMM shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination. Step 2: The AQCMM shall direct implementation of additional methods of dust suppression if step 1 specified above fails to result in adequate mitigation within 30 minutes of the original determination. Step 3: The AQCMM shall direct a temporary shutdown of the activity causing the emissions if step 2 specified above fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM to shut down an activity, provided that the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.	NQ	Fugitive dust	NO	Applicant's emissions estimate assumes sufficient watering to avoid visible dust plumes.
Mitigation Measure AQ-C5	**Fugitive Dust PM10 and Combustion Exhaust**			
Construction activities shall be limited to an eleven-hour per day schedule, and activities that may cause fugitive dust shall not begin before 7 am daily.		Fugitive dust and combustion exhaust	NO	Applicant's construction ambient air quality modeling is based on 11 hours of construction.

N/A Not applicable
NQ Not quantifiable

* South Coast Air Quality Management District, CEQA Air Quality Handbook, April 1993.

** H.E. Hesketh and F.L. Cross, Jr., Fugitive Emissions and Controls, Ann Arbor Science, 1983, Table 2.20.

*** *For example: California Air Resources Board (CARB), Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, October 2000; CARB, Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines*

**** *The mitigation measures in the FIS are misnumbered and have been renumbered consecutively.*

A. Measures That Were Implicitly Included In Emission Estimates

A number of proposed mitigation measures (AQ-C3d, e, f, g, h, and j) address fugitive dust emissions from trackout and runoff. We previously commented that emissions from trackout and runoff were not included in the Applicant's emission estimates. The FIS responded to these comments by stating that "trackout and runoff controls, are implicitly included in the emission estimates. Specifically, without trackout and runoff controls, the paved road silt loading would need to be revised as the local paved roads would become covered in dirt conveyed by traffic and runoff from the site." (FIS, p. 4-40.) Here, the FIS agrees with our conclusion. If mitigation measures addressing trackout and runoff were not already implicitly included in the emission estimates, fugitive dust emissions from local paved roads would be considerably higher due to increased trackout and runoff. Consequently, the emissions estimates represent mitigated emissions and mitigation measures AQ-C3d, e, f, g, h, and j do not have the potential to additionally reduce estimated fugitive dust emissions.

B. Measures Addressing Emissions That Were Not Included In Emission Estimates

Likewise, mitigation measure AQ-C3l, covering trucks or wetting materials that are loaded into trucks, addresses fugitive dust emissions that were not added into the Applicant's emission estimate (specifically, drop emissions into the truck bed and dust that spills from the truck bed during transport). Consequently, these mitigation measures, while effective in reducing actual emissions due to trackout, runoff, and emissions from loaded trucks, have no effect on reducing the emission estimate provided by the applicant and included in the FIS.

The FIS states that "recommending emission mitigation measures such as controlling emissions from trucks hauling bulk materials on public roadways is a reasonable mitigation measure to reduce these offsite fugitive emission sources so that these offsite fugitive emission sources are negligible and do not need to be calculated." (FIS, p. 4-40). Again, the FIS agrees with our conclusion that this mitigation measure addresses emissions that are not included in the emission inventory and has therefore no potential to further reduce the mitigated emissions estimate presented in the FIS.

C. Measures Specifically Included In Emission Estimates

The FIS proposes a number of other mitigation measures that were already incorporated into the applicant's emission estimates.

Mitigation measure AQ-C3a addresses watering of the project and linear construction sites, which potentially controls fugitive dust emissions from vehicle travel on unpaved roads and dirt pushing/bulldozing operations as well as dirt loading/handling. The applicant's revised emission estimate already assumes a watering control efficiency of 85% for unpaved roads. Further, the calculations of fugitive dust emissions from dirt pushing/bulldozing operations and dirt loading/handling assume a topsoil moisture content of 15%. A geotechnical assessment conducted in November 2003 measured moisture content in topsoil and fill ranging from about 1.3% to 2.5%. (Ex. F: LOR 1/04, Appx. B, boring logs B-15, B21, B-24, B-25, and B-29.) Thus, the assumed moisture content of 15% de facto assumes substantial watering for dust control.

Mitigation measures AQ-C3b and AQ-C3c limit vehicle speed on site to 10 miles per hour ("mph"), which potentially addresses fugitive dust emissions from vehicle travel on unpaved roads. However, the applicant's revised emission estimate already assumes vehicle speeds of less than or equal to 10 mph, specifically 5 mph for the dump trucks and water trucks and 10 mph for the service and delivery trucks as well as crew and visitor vehicles. Therefore, this mitigation measure is already included in the applicant's revised emission estimates.

Mitigation measure AQ-C3k, covering or treating soil storage piles and disturbed areas that remain inactive for more than 10 days, does not require wind erosion control until the piles remain inactive for more than 10 days. Therefore, this measure would not be in place on the day of maximum emissions. This mitigation measure therefore does not provide mitigation of the calculated worst-case emissions.

Mitigation measure AQ-C3n requires that construction activities that may cause fugitive dust emissions in excess of the visible emission limits shall cease when the wind speed exceeds 25 mph *unless* water, chemical dust suppressants, or other measures have been applied. This measure is ineffective for three reasons.

First, the measure allows continuing construction activities if water is applied, which negates the other parts of the mitigation measure, *i.e.* application of chemical dust suppressants or other measures. Second, the meteorology data used in the air dispersion modeling indicates that the wind

speed never exceeds 25 mph in November, the month when the maximum emission day occurs. Third, the applicant's construction emission estimates are based on typical wind speeds, rather than worst-case wind speeds that occur during the month of November. Thus, the applicant has underestimated maximum worst-case emissions by using an average wind speed, rather than a worst-case wind speed. This mitigation measure addresses emissions that occur under high wind conditions and will therefore not reduce the Applicant's calculated emissions because they are based on average wind speeds and the wind threshold level that triggers the measure does not occur during November.

Mitigation measure AQ-C3m, which addresses control of fugitive dust emissions due to wind erosion using wind erosion control techniques such as windbreaks, watering, chemical dust suppressants, and vegetation has been incorporated into the applicant's revised emission estimate. The applicant's emission estimate for fugitive dust emissions from wind erosion now includes a control efficiency due to watering of 68%, the upper end of the range of the watering control efficiency recommended by SCAQMD's CEQA Handbook.

In sum, all of the mitigation proposed by the FIS were assumed to be in place in calculating the construction emissions in Air Quality Tables 10 and 11 and resulting ambient air quality impacts in Air Quality Table 19, or the mitigation measures apply only to emission sources that were not included in the emissions and modeling. Therefore, the emissions and air quality impacts in Air Quality Tables 10, 11, and 19 are mitigated emissions and mitigated air quality impacts. These mitigated emissions and mitigated air quality impacts are significant, as demonstrated in Sections I and II. The FIS's only response to our comments on the Draft Initial Study on this issue is that this does not diminish the effectiveness of staff's proposed mitigation in controlling fugitive dust emissions. (FIS, p. 4-40.)

We agree that staff's proposed mitigation program does not diminish the effectiveness of the program. However, the FIS missed the point of our comments. Our point is that the DIS and FIS have double-counted the effectiveness of the proposed construction mitigation measures. The FIS first estimates emissions and air quality impacts assuming the proposed mitigation measures are in place or fails to include the emissions that its mitigation program addresses. The resulting impacts with mitigation in place are significant. The FIS then assumes that requiring these very same mitigation measures reduces the impacts to a level of insignificance. However, the proposed mitigation is already assumed to be in place in the analysis or addresses emissions that were not included in the FIS's analysis. Thus, the proposed mitigation in the FIS does not mitigate the significant construction impacts identified in the FIS.

Therefore, even though the FIS's proposed construction mitigation measures are beneficial, they do not mitigate the significant impacts identified in that document. Thus, the mitigated construction emissions presented in the FIS result in significant air quality impacts.

VI. EMISSIONS OF PM10 FROM OPERATING THE PROJECT WILL BE SIGNIFICANT BECAUSE THEY EXCEED SCAQMD'S DAILY EMISSION THRESHOLD AND SCAQMD'S 4 TON-PER-YEAR OFFSET THRESHOLD

The FIS states that the Project will have maximum daily emissions of PM10 of 144.2 lb/day from the turbines. (FIS, AQ Table 16, p. 4-28.) The FIS also states that the Project is exempt from providing offsets for its operational PM10 emissions because they are below the 4 ton per year threshold in SCAQMD Regulation XIII. (FIS, pp. 4-46, 4-48.) Staff based this conclusion on the Applicant's incorrect estimate of PM10 emissions. In fact, the Project's PM10 emissions during operation will exceed 150 pounds per day and 4 tons per year, even when calculated based on a permit limit of 1,330 hours per year. Thus, the Project's PM10 emissions are significant because they (1) exceed the SCAQMD's CEQA daily significance threshold and (2) violate SCAQMD's SIP rule requiring that the Applicant supply valid offsets for annual emissions that exceed 4 tons per year.

The Applicant claimed, and Staff accepted, an estimate of PM10 emissions of 3.0 lb/hr for each turbine, totaling 144.0 lb/day and 3.94 ton/yr. (FIS, p. 4-26 - 4-28, AQ Tables 15 – 17.) However, the information provided by the Applicant that Staff relied on does not represent worst-case operating conditions and is inconsistent with emission estimates previously prepared by the SCAQMD for nearly identical facilities. Further, the emissions apparently are only filterable PM10 and do not represent the normal operating mode of the turbines. Each of these issues is discussed below.

Although not required to offset PM10, VOC, and SO_2 emissions under SCAQMD regulations, the applicant has proposed a diesel engine retrofit program to fully mitigate the project's operating PM10, VOC and SO_2 operating emissions. (FIS, p. 4-46.) However, the proposed offset program would not mitigate the significant impacts of the Project. Further, the proposed offset program would not comply with SCAQMD Rule 1304.

A. Operational Emissions Are Not Based On Worst-Case Operating Conditions

The maximum operational PM10 emissions were estimated to be 3.95 ton/yr. (FIS, AQ Table 17.) Of this total, 3.94 ton/yr is from the turbines and 0.005 ton/yr from the cooling tower and ZLD filtercake handling. This testimony only addresses the turbine emissions.

The PM10 emissions for both turbines were computed from the sum of the emissions from: (1) 400 hrs of startup at 2.74 lb/hr; (2) 400 hrs of shutdown at 3.0 lb/hr; (3) 40 hrs of maintenance at 3.0 lb/hr; and (4) 1,820 hours of normal operation at 3.0 lb/hr. (FIS, pp. 4-26 to 4-28, AQ Tables 14, 15, and 17.)

The tables and notes to the tables in the FIS that summarize the emission rates characterize these emissions as "worst-case hourly emissions," "worst-case daily," and "maximum," based on the Application. (FIS, AQ Tables 14-17.) However, these emissions are not maximum or worst-case.

The PM10 emissions of 3 lb/hr per turbine are based on the GE guarantee for the turbines. The GE emission guarantees for the Project are included in the Application, Appendix A, second page and Appendix B, third page. This page shows that particulate matter emissions from the turbines are guaranteed at 3 lb/hr, the emission rate used in the so-called worst-case calculations. The guarantee applies at an ambient dry bulb temperature of ***100.0°F*** and wet bulb of 68.0°F.

However, emissions depend on the amount of fuel that is burned. The amount of fuel that is burned depends on the mass flow rate into the turbine. The mass flow rate decreases as temperature decreases. Therefore, emissions increase as ambient temperatures decrease. The emissions of PM10 and other pollutants would increase at temperatures lower than 100°F. The CEC and air permitting agencies have consistently based emission estimates on the worst-case, which is cold weather conditions. There is no reason why emissions from this Project should be based on minimum emission, hot weather operation. The project will certainly be producing electricity on days with lower ambient temperatures than 100°F.

Normally, an application to the CEC for licensing includes performance runs at a range of conditions that include cold, average, and hot weather conditions. See, for example, the Roseville application for certification (Ex. K)[18] and for an air permit[19] for a similar project that

[18] Roseville Electric, Application for Certification for the Roseville Energy Park, Roseville, CA, v. II: Appendices, October 2003, Appendix 8.69.81-A and 63.

includes two LM6000 Sprint turbines. These applications were based on three performance runs: a hot case (99°F), an average case (62°F), and a cold case (34°F). The Roseville hot case resulted in PM10 emissions of 2.8 lb/hr, the average case in PM10 emissions of 3.0 lb/hr, and the cold case in PM10 emissions of 3.2 lb/hr. (Ex. K.) These may seem like small differences. However, because Riverside annual emissions are 3.95 ton/yr, only 0.05 ton/yr below the offset threshold, these changes in emissions at lower temperatures are high enough to increase annual emissions over the offset threshold.

The SCAQMD also routinely relies on performance runs over a range of ambient temperatures. The Wildflower Indigo project is located in Palm Springs and is a similar peaking project based on LM6000 turbines. This project was permitted by the SCAQMD in March 2001. Maximum PM10 emissions were selected from five full load operating conditions at ambient temperatures of 32°F, 70°F, and 112°F, with the chiller on and off. (Ex. L.)[20]

The Riverside Application only reports emissions for hot conditions, at 100°F, which is the lowest emission case, not the worst-case or maximum, as required for certification and air permitting. Further, supporting performance data, comparable to that provided in Roseville and many other siting cases, for other operating conditions, was not provided.

Although the Project will reportedly be primarily used for summer peaking service, it is not limited to operating only during the summer, or precluded from operating on cooler summer or winter days when electrical output and emissions would be higher than assumed. Temperature data for a number of nearby sites, summarized in Table 3, indicate that much lower average ambient temperatures occur during summer months than 100°F. The average June temperature ranges from 69.8 to 73°F, the average July temperature from 74.6 to 78°F, the average August temperature from 76.3 to 78°F, and the average September temperature from 72.8 to 76°F for three nearby stations. Minimum summer temperatures are as low as 55°F. A temperature of 100°F or higher occurred only 0.29% of the time or for 442 hours between 1986 and 2003, based on the UC Riverside data. Thus, it is not reasonable to estimate maximum PM10 emissions at an ambient temperature of 100°F, which would be experienced on very few days.

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[19] Roseville Electric, Authority to Construct and Permit to Operate Application for the Roseville Energy Park, Roseville, California, October 2003, Appendix 3.1-A.

[20] Docket 01-EP-2, Indigo Energy Facility, Staff Assessment for Emergency Permit, March 31, 2001, Appendix B, (SCAQMD, Permit to Construct, Application No. 366.58378045, Wildflower Energy LP, March 28, 2001.59.176), attached as Exhibit L.

Table 3
Monthly Average Dry Bulb Temperature
In Vicinity Of Riverside Project Site

Month	UC Riverside 1986-2003	Riverside Fire Station 1927-2004	Ontario Airport 1973-1993
January	54.5	53.2	54
February	55.4	54.9	57
March	57.6	57.3	58
April	61.2	61.4	63
May	64.8	66.1	67
June	69.8	71.2	73
July	74.6	77.2	78
August	76.3	77.5	78
September	72.8	74.2	76
October	66.5	67.0	70
November	59.1	58.9	61
December	53.8	53.7	55
Annual	63.9	64.4	66

Worst-case emissions should be based on cold weather conditions, not hot weather conditions, for PM10 and other pollutants. Further, even if the Project were restricted to summer peaking service, many summer days have a much lower ambient temperature than 100°F. We will demonstrate below that even at 72°F, the design basis, PM10 emissions would be about 3.2 lb/day.

At 3.2 lb/day of normal operation for each turbine, the daily emissions would be 153.6 pounds, which exceeds the SCAQMD's threshold of significance of 150 lb/day. (See Exhibit H, SCAQMD 4/93.) This is a significant impact.

In addition, we recalculated the annual operational PM10 emissions, assuming maximum PM10 emissions are 3.2 lb/hr, which is the cold weather PM10 emission rate estimated by GE for a nearly identical turbine in the Roseville siting case:

Table 4
Revised PM10 Emissions

Emission Source	Emission Rate (lb/hr)	Total Hours[b]	Total Emissions (ton/yr)
Turbine Startup	2.92[a]	400	0.58
Turbine Shutdown	3.2	400	0.64
Turbine Maintenance	3.2	40	0.06
Turbine Normal Op.	3.2	1820	2.91
Cooling Tower & ZLD			0.005
TOTAL			**4.195**

[a] Based on the same ratio of startup to normal operation as used in the FIS, AQ Table 14, or (2.74/3.0)(3.2) = 2.92 lb/hr.
[b] For two turbines, based on FIS, p.4-28.

The total PM10 emissions, calculated based on a cold weather PM10 emission rate of 3.2 lb/hr, exceed the offset threshold of 4 ton/yr. Therefore, these emissions must be offset under SCAQMD Rule 1303. The cold weather hourly PM10 emission rate for Riverside could be higher than 3.2 lb/hr because its firing rate is higher than the firing rate of Roseville.

Further, the emissions of other regulated pollutants that are not controlled by a pollution control device, including SO_2 and VOCs, are underestimated for the same reason. Therefore, the Applicant requires more VOC offsets than reported in the FIS.

B. Inconsistent With Similar SCAQMD Projects

The SCAQMD has permitted (and the CEC has licensed) two other very similar LM6000 peaker projects: Wildflower Indigo and Pegasus. (Ex. M)[21] Wildflower Indigo commenced operation in July 2001 and consists of three LM6000 enhanced Sprint turbines. Pegasus, approved in June 2001, then later abandoned, proposed four LM6000 enhanced Sprint turbines.

In both of these cases, the SCAQMD rejected the Applicant's PM10 emissions based on GE guarantees and calculated total PM10 emissions from an emission factor of 0.0066 lb/MMBtu, comprising filterable and

[21] Docket 01-EP-9, Pegasus Project (01-EP-9), Staff Assessment for Emergency Permit, June 2, 2001 and SCAQMD, Permit to Construct, Application No. 385555-385567, Pegasus Power Partners, May 25, 2001 (attached as Exhibit M).

condensable PM10, based on AP-42, Table 3.1-2a. (Ex. G)[22] The maximum PM10 emissions calculated for Wildflower Indigo were 3.3 lb/hr and for Pegasus, 3.1 lb/hr. The CEC accepted this calculation procedure in these siting cases, as well as others, e.g., Hanford and Henrietta.

Using the AP-42 PM10 emission factor of 0.0066 lb/MMBtu, the PM10 emission rate for Riverside would be 3.23 lb/hr,[23] based on the higher heating value fuel consumption of 490 MMBtu/hr for the 72°F design case. (Ap., Appx. A, p. 1.) The annual emissions corresponding to an hourly emission rate of 3.23 lb/hr are 4.30 ton/yr, which exceeds the offset threshold of 4 ton/yr. Therefore, if the SCAQMD's standard procedure of estimating PM10 emissions using AP-42 is used, PM10 emission offsets under Rule 1303 would have to be provided. The 72°F firing rate of 490 MMBtu/hr used in this calculation, which is based on an ambient temperature of 72°F, is not the highest possible firing rate because it is based on an average design case, rather than the cold weather case, as discussed above. Therefore, worst-case PM10 emissions could be higher than 3.23 lb/hr and 4.30 ton/yr.

C. GE Guarantee Based On Filterable PM10 Emissions

The applicant stated in its response to CURE Data Request 83 that the GE guarantee is based on total PM10, comprising filterable and condensable. However, the GE guarantee is based on SCAQMD Method 5.1. This method measures both total PM10 (comprised of filterable and condensable), and filterable PM10 alone. It is unclear whether the GE guarantee applies to total PM10 or filterable PM10 only. However, we note that the 100°F design performance data in the Application estimated PM10 emissions of 5.5 lb/hr per turbine (Ap., Appx. A, p. 5), while the guarantee is based on only 3 lb/hr. Condensable PM10 is typically about 50% of total PM10. Therefore, an emission rate of 3 lb/hr is consistent with what would be expected from counting the filterable portion only.

Further, the measured total PM10 emissions from LM6000 turbines frequently exceed 3 lb/hr. The results of 15 source tests on similar LM6000 turbines indicate that a total PM10 emission rate of 3 lb/hr is exceeded about 33% of the time and range up to 6.1 lb/hr, as follows:

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[22] U.S. EPA, Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources, Section 3.1, April 2000 (attached as Exhibit G).

[23] Revised PM10 emission rate: (0.0066 lb/MMBtu)(490.0 MMBtu/hr) = 3.23 lb/hr. The emission factor of 0.0066 lb/MMBtu is from AP-42, Table 3.1-2a and the firing rate is from the Application, Appendix A, p. 1, "Turbine Performance Specifications," fuel consumption based on the higher heating value.

Table 5
PM10 Source Tests for GE LM6000 Turbines

		Power Output (MW)	Sample Duration (min)	Analytical Method	PM10 (lb/hr) Filterable	PM10 (lb/hr) Condensable	PM10 (lb/hr) Total	Percent Condensable
P&G Cogen ,Sacramento (2 GE LM 6000 45 MW ea) (SCR and CO Catalyst)								
2/4/97	Turbine A/HRSG on	43		CARB Method 5	1.44	2.89	4.33	67%
3/19/97	Turbine A/HRSG off	44.3		CARB Method 5	3.70	1.07	4.77	22%
2/6/97	Turbine B/HRSG on	43		CARB Method 5	2.04	1.70	3.74	45%
2/18/97	Turbine B/HRSG off	43.9		CARB Method 5	3.99	2.11	6.10	35%
3/19/97	Turbine A/HRSG on	43		EPA Method 201/202	0.130	0.075	0.205	37%
3/20/97	Turbine A/HRSG off	43		EPA Method 201/202	0.231	0.662	0.893	74%
3/17/97	Turbine B/HRSG on	43		EPA Method 201/202	0.167	1.043	1.21	86%
3/18/97	Turbine B/HRSG off	43		EPA Method 201/202	0.21	1.08	1.29	84%
3/11/98	Turbine A/HRSG on	44.1	120	EPA Method 5/8/202	1.26	0.38	1.64	23%
3/12/98	Turbine B/HRSG on	43.6	60	EPA Method 5/8	1.87	0.767	2.64	29%

Carson Ice-Gen, Sacramento (2 GE LM 6000) (SCR + Water Inj; Peaker has CO Catalyst)								
9/95	Peaking Unit	42.1	240	EPA Method 201/202	0.45	0.18	0.63	29%
10/95	Combined Cycle (Mixed Fuel)	43.6	240	EPA Method 201/202	0.40	0.61	1.01	60%
11/96	Peaking Unit CTG2	44	120	EPA Method 201/202	0.364	0.518	0.882	59%
	Peaking Unit CTG2a	44	120	EPA Method 201/202	1.94	4.11	6.05	68%
11/96	Combined Cycle (Mixed Fuel)	44	120	EPA Method 201/202	< 0.149	1.93	2.08	93%
						Average		**54%**

The FIS states that this source test data "does not provide appropriate context for evaluation, does not reflect Southern California natural gas fuel quality, generally shows emissions well below the applicant's 3.0 lb/s/hr emission factor (particularly for the peaking cases), and is six to nine years old and so many not reflect the PM10 emission profiles for current LM6000 turbines." (FIS, p. 4-30.) This is incorrect.

First, the FIS suggests that the natural gas in Southern California and Sacramento is distinguishable. Natural gas used in fired sources in California burn PUC-quality natural gas, which must meet uniform, statewide standards. The U.S. EPA emission estimating handbook, AP-42, does not distinguish types of natural gas for purposes of estimating PM10 emissions for turbines. (Ex. G, AP-42, Sec. 3.2.) The SCAQMD, the SJVAPCD, and other agencies rely on the natural gas fired turbine emission factors in AP-42 to estimate turbine emissions, regardless of location.

Second, the FIS argues the tests generally show PM10 emissions are less than 3.0 lb/hr, especially for peaker turbines. The source tests summarized in Table 5 show that 5 out of 15 sources tests had PM10 emissions greater than 3.0 lb/hr, ranging from 3.74 lb/hr to 6.10 lb/hr. These 15 source tests on similar LM6000 turbines indicate that a total PM10 emission rate of 3 lb/hr is exceeded 33% of the time. One out of the three tests on LM6000 turbines operated in peaking mode, or 33%, exceed 3.0 lb/hr. Four out of the 12 tests on LM6000 turbines operated in combined cycle mode exceed 3.0 lb/hr or 33%. Thus, the percent of the tests in which 3.0 lb/hr is exceeded is identical for LM6000 turbines operating in both peaking and

combined cycle modes. Further, the second highest measurement was made on a turbine operating in peaker mode (6.05 lb/hr).

Permit limits cannot be exceeded 33% of the time. Thus, these source tests demonstrate that for purposes of permitting and offsetting, the PM10 emissions from LM6000 turbines is greater than 3.0 lb/day 33% of the time. The FIS's statement that these tests demonstrate that PM10 emissions are generally well below 3.0 lb/hr misses the point, since the RERC cannot exceed its permit limit 33% of the time, even if it generally complies 67% of the time.

Third, the FIS suggests that the tests are not applicable because they are 6 to 9 years old. The methods used to measure PM10 have not changed in the past 6 to 9 years, nor the skills of those who conduct source tests. The California Air Resources Board ("CARB") relied on many of these same tests in determining Best Available Control Technology ("BACT") for gas turbines in 1999[24]]. Thus, the tests are reliable.

Finally, the FIS states that the source tests in Table 5 do not reflect the PM10 emission profiles for current LM6000 turbines. (FIS, p. 4-30.) The type and size of turbine does not affect the PM10 emission profile. The PM10 emissions originate from combusting natural gas. The primary factor that affects the emission rate in pounds per hour is the amount of fuel that is burned. The AP-42 PM10 emission factor for gas turbines is identical for all natural gas fired turbines when reported in pounds per million Btus ("lb/MMBtu"). (Ex. G: AP-42, Table 3.1-2A.) The applicant noted in response to CURE Data Request 80 that "PM emissions from gas turbines are a function fuel flow . . . " The PM10 emissions summarized in Table 5 are from turbines that were generally burning less natural gas than would be burned by the RERC LM6000s. Therefore, the comparable PM10 emissions from the RERC LM6000 turbines would be higher than shown in Table 5.

Thus, it is unclear whether the 3 lb/hr, which was used to calculate annual emissions for purposes of offsetting, is based on total or filterable PM10. Actual source tests on similar turbines as well as GE performance data (Ap., Appx. A, p. 3) suggest that the GE guarantee is based only on the filterable portion of PM10 and total PM10 emissions could be much higher than 3 lb/hr. This is very important as source tests typically only occur annually or less frequently and do not represent actual operating conditions.

Therefore, the Commission should assume that the 3 lb/hr is only filterable PM10 unless the Applicant can provide evidence that the 3 lb/hr

[24] California Air Resources Board (CARB), Guidance for Power Plant Siting and Best Available Control Technology, June 1999, Appendix C (attached as Exhibit N).

emission rate used to calculate annual emissions is total PM10, comprising filterable plus condensable, as required by SCAQMD regulations.

D. GE Guarantee Inconsistent With Routine Operating Conditions

The GE guarantee, which is the basis for the Applicant's claim of 3 lb/hr emission rate, does not appear to represent normal operating conditions for a peaker. The guarantee requires that each turbine must have "more than 300 fired hours of operation prior to testing." Thus, it is based on new and clean conditions. Further, "…each unit must operate at Base load 3 to 4 hours just prior to commencing PM Compliance Test." (Ap., Appx. A, p. 2.) A peaker, by definition, will not normally be operating at base load for extended periods of time. Therefore, this restricted condition does not represent normal operating conditions. Finally, the guarantee requires the use of SCAQMD Method 5.1, while the SCAQMD usually requires that total PM10 emissions from gas turbines be measured with SCAQMD Method 5.2.

VII. THE PROPOSED DIESEL ENGINE RETROFIT PROGRAM DOES NOT MITIGATE THE SIGNIFICANT OPERATIONAL IMPACTS OF THE PROJECT

The FIS concludes that "all project emissions of nonattainment criteria pollutants and their precursors…are considered to be significant…" (FIS, p. 4-31.) The applicant proposed a diesel engine retrofit program to fully mitigate the project's PM10, VOC and SO_2 emissions from operation. (FIS, p. 4-46.) The applicant's estimate of its emission liabilities is summarized in Air Quality Table 23. (FIS, p. 4-47.) The emission liabilities exclude ammonia, which is a PM10 precursor. Further, the proposed diesel engine retrofit program is not adequate to fully mitigate the operational emissions in Air Quality Table 23.

A. Ammonia Was Not Included In The Estimate Of Emissions And The Calculation Of Offsets

The applicant is proposing to offset primary PM10 emissions plus secondary PM10 from only SO_2 emissions. However, the project also would emit 3.33 lb/hr of ammonia per turbine. Assuming that each turbine operates 1330 hrs/yr, the project would emit 8,858 lb/yr of ammonia. (Ap., Appx. C, FIS, AQ Table 16.)

Excess residual ammonia downstream of the SCR can react with SO_3, NO_2, and water vapor in the stack gases and downwind in the atmosphere to form ammonium sulfate, ammonium bisulfate, and ammonium nitrate

according to the following reactions. (Seinfeld and Pandis 1998, pp. 529-534;[25] Matsuda *et al.* 1982;[26] Burke and Johnson 1982.[27])

$$SO_3 + 2\ NH_3 \leftrightarrows (NH_4)_2SO_4 \quad (1)$$
$$SO_3 + NH_3 \leftrightarrows NH_4HSO_4 \quad (2)$$
$$NO_2 + OH + NH_3 \leftrightarrows NH_4NO_3 \quad (3)$$

These equations can be used to estimate secondary PM_{10} formation from ammonia slip. Secondary PM_{10} can be formed by reaction of ammonia with SO_3 and NO_2 emitted by the gas turbines and present in the stack gases and plume as well as additional SO_3 and NO_2 that are present downwind in the atmosphere.

This additional PM_{10} has not included in the project's emissions estimates nor the Project's emissions offset requirements.

Ammonia emissions are a significant enough problem in the South Coast Air Basin, and in the Riverside area in particular, that on August 6, 2004, the SCAQMD adopted rule 1127 to reduce ammonia emissions from livestock waste.

B. Diesel Engine Retrofit Program Does Not Mitigate Project Impacts

The FIS concluded that all emissions of nonattainment pollutants and their precursors are significant. (FIS, p. 4-31.) Thus, these emissions must be fully offset. The applicant "has committed to fully offsetting the project's PM10, VOC, and SO_2 emissions through the retrofit of local diesel fueled equipment, such as school buses, with tailpipe emission controls." (FIS, p. 4-48.)

The FIS indicates that about 100 to 130 school buses would have to be retrofit and that there are enough school buses and municipal bus fleets or other local diesel vehicle fleets in Riverside to fully mitigate the project's emissions. (FIS, p. 4-49.) Thus, the FIS concludes that the proposed program "would provide a significant net air quality benefit to the local area, including a net benefit in terms of air toxic pollutant impacts" and thus

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[25] John H. Seinfeld and Spyros N. Pandis, Atmospheric Chemistry and Physics, John Wiley & Sons, Inc., New York, 1998.

[26] S. Matsuda, T. Kamo, A. Kato, and F. Nakajima, Deposition of Ammonium Bisulfate in the Selective Catalytic Reduction of Nitrogen Oxides with Ammonia, Ind. Eng. Chem. Prod. Res. Dev., v. 21, 1982, pp. 48-52.

[27] J.M. Burke and K.L. Johnson, Ammonium Sulfate and Bisulfate Formation in Air Preheaters, Report EPA-600/7-82-025a, April 1982.

incorporates the program as COE AQ-1. (FIS, p. 4-49.) However, the FIS does not contain sufficient information to evaluate the proposed program and reach this conclusion. Further, if school buses will be used, the proposed program will not mitigate the project's impacts.

1. Offset Program Not Adequately Described

The information in the FIS is not adequate to evaluate whether the proposed offset program will actually fully mitigate the project's nonattainment pollutant emissions.

The proposed mitigation measure, AQ-1 (FIS, p. 4-57 to 4-58), allows the applicant to develop and submit the details on the retrofit program after the SPPE is granted, depriving the public of any review of the proposed program. The FIS contains no evidence that nonattainment operational emissions will be fully mitigated. To qualify as valid mitigation, the emission reductions must be new, permanent, quantifiable, and enforceable. Further, they must occur at the same time and place as the project's emissions. The available information suggests that none of these conditions will be satisfied. Therefore, air quality impacts due to the emission of nonattainment pollutants are significant.

The proposed COE requires some, but not all of the information that would be required to evaluate the proposal after it is submitted. In contrast, the SCAQMD requires much more stringent steps to use mobile sources to offset emissions from a stationary source such as a power plant. (SCAQMD Regulation XVI.) The following information is required to determine if the proposed diesel engine retrofit program would fully mitigate the project's emissions of nonattainment pollutants and their precursors:

- the make, model and year of each engine the applicant intends to retrofit;
- the remaining lifetime of each engine;
- a maintenance and service log for each engine ;
- fuel use data for the past 5 years for each engine;
- identification of any modifications to each engine that would affect its emissions;
- total Vehicle Miles Traveled by year for the past 5 years;

- the historic operating schedule by year for the past 5 years and for the balance of the life of the engine. This schedule should include the number of days a week the engines are used, whether those days include weekend days or weekdays, the number of hours per day the engines are used, the time of day the engines are used, the months of the year in which the engines are used, the number of hours the engines idle, and the average load over the operating hours.

- evidence that each engine would remain in use in the same capacity and on the same operating schedule as used historically for the full life of the RERC;

- a full and accurate description of the historic and future travel patterns and routes for each engine the Applicant proposes to retrofit;

- emission rates in pounds per vehicle mile traveled for each engine or pounds per gallon or some other suitable emission metric for both idling and full load operation, appropriate to the available operating records;

- the type of control(s) proposed for each engine and the emission reductions that would be achieved by each control for each pollutant for which reductions are claimed;

- the lifetime of the control(s) installed on each engine;

- a plan for replacing engines that are retired;

- a plan for preventing tampering with the control systems;

- a reporting system to track actual emission reductions, e.g., recording of fuel use, miles traveled, maintenance, etc that is verified by a registered professional engineer and submitted to the CPM and the SCAQMD on an annual basis;

- the methods that would be used to determine the emission rates of PM10, VOCs, and SO_2 of the uncontrolled and controlled engines.

2. Offset Program Would Not Mitigate Impacts

The FIS suggests that the applicant's mitigation program would primarily retrofit engines on school buses and other city fleets. The FIS emphasizes school buses, *viz.*, "the applicant would need to retrofit approximately 100 to 130 school buses," "[t]he Riverside Unified School

District leases over two hundred school buses and there are several school districts in the area that own or lease an additional number of buses." (FIS, p. 4-49.) COE AQ-1 contemplates "[t]he retrofit of emission controls on diesel powered school buses within the Riverside School District or directly adjacent school district." (FIS, p. 4-58.) Retrofitting school buses would not mitigate the project's significant nonattainment pollutant emissions for several reasons.

First, the school year in the local school districts likely runs from August or September through May or early June. The applicant states that the peakers would only operate from May to October. (FIS, Energy Resources, Attachment B) When in session, the school day typically runs from about 8 AM to 3 PM, Monday through Friday. Similarly, other city bus fleets would not ordinarily operate 24 hours per day, 7 days per week. The turbines, on the other hand, will be permitted to operate 24 hours per day, 7 days per week. Therefore, school and other buses would not be operating the majority of the time that the turbines operate and the emissions would not be offset at the same time.

Second, the school buses (or other) mobile sources would emit along their customary route, rather than immediately adjacent to the project. Therefore, bus retrofits would not necessarily fully mitigate the local impacts of project emissions where they occur.

Third, many of the existing buses would likely be replaced with new low-emitting buses over the lifetime of the project. Therefore, some of the future reductions would not be valid mitigation because they would have occurred anyway.

VIII. EMISSIONS OF CO FROM OPERATING THE PROJECT WILL BE SIGNIFICANT BECAUSE THEY EXCEED SCQAMD'S DAILY EMISSION THRESHOLD

The maximum daily CO emissions from the project are 721.10 lbs/day. (FIS, AQ Table 16.) Total project emissions would be higher because indirect emissions from mobile sources are not included in this total. The SCQAMD significance threshold for CO 92 550 lbs/day, including both direct and indirect emissions. (SCAQMD 4/93, p. 6-2.) As explained elsewhere in our testimony, these thresholds are applicable to this project. Therefore, the project's CO emissions are a significant air quality impact.

IX. CUMULATIVE AIR QUALITY IMPACTS ARE SIGNIFICANT

The FIS did not perform a cumulative air quality impact analysis because it claims that there are no currently proposed new and significant cumulative emission sources near the project site. (FIS, p. 4-50.) This is incorrect.

A. Capital Improvement Project

The City plans to implement a capital improvement project ("CIP") at its wastewater treatment facility and cogeneration plant, which is immediately adjacent to the RERC site. The CIP will replace, expand, and upgrade the primary and secondary treatment system, replace portions of the cogeneration system, implement biosolids handling projects, build two new clarifiers, and increase the capacity of the collection system, among other things. A description of the wastewater treatment plant capital improvement project generated by the City of Riverside is included in Exhibit O.[28] The improvement and expansion of the facility is projected to span six years. This project is currently under construction.

We requested CEQA compliance documents on this project from the City, but they were not provided. Therefore, we cannot quantitatively evaluate the air quality impacts of this project. However, the description of the project in City documents indicates that its construction and operation will emit substantial amounts of pollutants that are likely to be cumulatively significant.

1. Construction Impacts Are Cumulatively Significant

The FIS ignores cumulative construction air quality impacts. Construction emits exhaust fumes and fugitive dust. The construction of the RERC project will overlap with the construction of the CIP project. See 2004/2005 project descriptions in Exhibit O and detailed construction schedule for the aeration upgrades in Exhibit P. Therefore, construction of the CIP project will result in cumulative impacts.

Even overlooking the errors in the applicant's testimony and the FIS, the construction air quality impacts described in the FIS are very close to significance thresholds. The increase in 24-hour PM10 concentrations at the nearest sensitive receptor is 9.3 ug/m^3, compared to a threshold of 10.4 ug/m^3. (FIS, p. 4-36.) The 1-hour NO_2 concentration is 85% of the CAAQS. (FIS, AQ

[28] City of Riverside, Public Works/Capital Improvements – Sewer Fund, Summary of Expenditures by Year (attached as Exhibit O).

Table 19.) Therefore, a small contribution from construction of immediately cumulative projects could result in cumulatively significant impacts.

2. Operational Impacts Are Cumulatively Significant

The FIS argues that the majority of the CIP improvements will not impact air emissions and "that on the whole the improvements are likely to reduce emissions rather than increase emissions." (FIS, p. 4-51, note 8.) This ignores the fact that the CIP project will increase the capacity of many of the units that emit air pollution, including (Ex.O: Summary of Expenditures by Year):

- p. 1: "The six-year Capital Improvement Program includes $9 million for the upgrade of the primary and secondary treatment systems. These upgrades are intended to improve treatment efficiency, reduce system maintenance and *increase plant capacity*."

- p. 1: "Improvements at the Water Quality Control Plant are determined from the need to comply with state and federal regulations, *increasing capacity*, and plant efficiency."

- p. 5: (2003/04) "Construction of various equipment upgrades to increase treatment and energy efficiency as well as *increase treatment capacity*."

- p. 6: (2004/05) "Update the waste gas flaring system at the WQCP to meet current AQMD requirement and *increase flaring capacity*…"

- p. 6 (2004/05) "Replacement of the CoGen cooling tower structure is required due to inefficient cooling conditions." Improving cooling means that the capacity of the tower will likely be increased.

- p. 7 (2005/06) "Engineering and construction of two secondary clarifiers to satisfy capacity safety requirements for secondary clarifiers (eliminate facility bottleneck)." Eliminating bottlenecks increases capacity.

- p. 8 (2006/07) "Engineering and construction of two secondary clarifiers to satisfy safety requirements for secondary clarifiers (eliminate facility bottleneck)." Eliminating bottlenecks increases capacity.

- p. 8 (2006/07) "Additions and improvements to collection system *increasing capacity* based upon capacity evaluation study and Interceptor Master Plan."

Thus, the capacity of a number of units that emit pollutants or that serve units that emit pollutants, i.e., collection system, would increase emissions. Cooling towers emit PM10. Flares emit NOx, VOCs, PM10, and CO. The primary and secondary treatment systems, including the clarifiers and aeration basins, emit VOCs and ammonia from basin surfaces and as a result of aeration, which strips out volatiles. The increases in efficiencies refer to improving the removal of contaminants, such as BOD, COD, TSS, and ammonia. This does not mean emissions decrease. In fact, in most cases, it means emissions would increase because treatment capacities would increase.

Therefore, operation of the CIP will increase emissions. Again, even overlooking the errors in the applicant's testimony and the FIS, because the RERC operational emissions of VOCs (54.52 lb/day) are within 0.48 lb/day of the VOC SCAQMD significance threshold of 55 lb/day and the operational emissions of PM10 (144.19 lb/day) are within about 6 lb/day of the SCAQMD significance threshold of 155 lb/day, the emissions from RERC plus those from the CIP will likely exceed these significance threshold. The emissions of VOCs from the CIP from improved aeration alone, for example, will certainly exceed 0.48 lb/day, resulting in a cumulatively significant VOC impact. Thus, operational emissions from RERC are cumulatively significant.

B. Two Additional Turbines

The City also plans to expand its electric generation capacity. The project site and layout is being designed to accommodate two additional units, Units 3 and 4. Tanks are being sized for two additional units, piping is being sized to supply all four units, and the layout leaves space for full buildout. The applicant has supplied voluminous evidence that Units 1 and 2 are part of the ultimate four unit power plant. These should be evaluated as either part of the project, or as a cumulative project. The FIS does not evaluate them at all.

There is no question that the City will need more power than can be supplied by two units alone. The May 6, 2003 meeting notes of a meeting between Riverside Public Utilities ("RPU") and POWER Engineers provided by the Applicant indicate that "RPU's contract for Baseload power expires in 2010-2011 creating the need for another 50 MW [in addition to the project]. Thus the plant could ultimately evolve into a 2x1 or a 3x1 power plant. The site layout and conceptual design should keep this in mind."

The May 19, 2003 "50 MW Peaker Plant Evaluation" likewise notes that "[b]eyond that, it may be necessary [sic] add additional base load

generating capacity when the current base load energy supply contract expires in 2010." (Hearing Exhibit 6, p. 2 of 8.).

The June 24, 2003 meeting notes (Hearing Exhibit 6) indicate: "[b]ased on the proceeding, and RPU needing 50 MW of peaking in 2005, another 50 MW of peaking in 2008, and 120 MW of base/intermediate in 2012, develop the GA showing the maximum generation potential (assume all LM6000's for now)."

These statements demonstrate that more than the proposed 96 MW is required by 2010 when existing contracts expire. Rather than propose a whole new facility elsewhere, the City is naturally planning to add to the generating capacity at a site that already contains the necessary infrastructure to accommodate additional generating capacity. At the May 26, 2004 public informational hearing on this Project, the City acknowledged that it is "making provisions" to add two additional turbines to the Project site. The geotechnical reports for RERC were prepared for site buildout and include figure that show all four units. (Hearing Ex. 14) Site development would disturb 13 acres, or the majority of the site.

Not only does the Applicant need the additional generating capacity, it has made specific, concrete provisions for Units 3 and 4.

- The Applicant has provided numerous visual design schemes for the Plant that contemplate four turbines.

- The Applicant has sized the water tanks with spare capacity

- The Applicant has included tees in the piping for critical systems and in the natural gas line for easy extension to Units 3 and 4.

- Most tellingly, the Applicant has produced a specific, detailed design plan showing the location of all equipment for all four units.

The emissions from two additional turbines plus those from the RERC project would approximately double emissions. The total emissions would exceed the SCAQMD significance thresholds for VOCs and PM10, resulting in cumulatively significant impacts.

C. The FIS Should Have Evaluated These Cumulative Projects

The FIS acknowledges both of these projects, but declines to evaluate them.

We previously commented on the potential cumulative impacts of these projects. The FIS states that these projects are not relevant because emissions and exhaust parameters do not exist; they are not in permitting; they are not in construction; or they are not recently completed and not operating long enough to be included in recent ambient air quality data. (FIS, p. 4-50.) This is far too narrow and is not consistent with the usual meaning of cumulative impacts.

The FIS states that it "only requires the completion of cumulative analyses for conceptually developed projects with known emissions and exhaust parameters." (FIS, p. 4-50.) This is inconsistent with the definition of cumulative impacts. Further, it is unreasonable because emissions and exhaust parameters can be readily estimated by a trained air quality engineer. Further, emissions and exhaust parameters are available for both cumulative projects.

The expansion of the RERC project includes two turbines that are identical to those proposed for RERC. Thus, the emissions and exhaust parameters are known. The CIP is the applicant's own project and has been described in sufficient detail to prepare a construction bid package and to commence construction. The bid package and contractor bid provide sufficient information to estimate project emissions, and far more detail than is available for the RERC project.

The FIS states that the projects must be in the permitting phase, in construction, or recently completed and not operating long enough to be included in recent ambient air quality data. (FIS, p. 4-50.) This is inconsistent with the definition of cumulative impacts under CEQA, which applies to "past, present, and reasonably foreseeable future projects," not just those that are being permitted, constructed, or are operating. Further, the CIP is under construction.

Third, the FIS states that the CIP is not yet in permitting. The project is under construction. Therefore, it is either permitted or being constructed without permits.

The FIS states that the CIP will not impact air quality and that the whole of the improvements "are likely to reduce emissions rather than

increase emissions." (FIS, p. 4-51, note 8.) This is incorrect for the reasons outlined in Section IX.A.

In sum, the FIS should have prepared a cumulative air quality impact analyses. The available information indicates that impacts are cumulatively significant.

X. CONSTRUCTION NOISE IMPACTS ARE SIGNIFICANT

The Final IS estimated the increase in noise due to construction by subtracting the measured existing ambient daytime noise level, 46 dBA, from the estimated cumulative noise level of 51 dBA. This calculation indicates that Project construction would increase ambient noise levels by 5 dBA. (FIS, Noise Table 4, p. 12-9.) The FIS concludes that this is an insignificant noise impact because construction noise is temporary and will occur during daytime hours. This conclusion is incorrect for several reasons, as discussed below.

A. Construction Will Not Occur Only During Daytime Hours

The air quality modeling assumed that construction would occur from 7 AM to 6 PM in the winter and from 6 AM to 6 PM in spring and fall. (FIS, p. 4-35; Ex B to Sears Testimony.) The hour between 6 AM and 7 AM is considered to be a sensitive nighttime hour in noise analyses and lower noise significance standards apply. See, for example, FIS, Noise Table 1 and page 12-2. Many people are asleep at 6 AM. Being awakened at 6 AM by construction noise for several months is a significant impact.

Further, the FIS recommends that the applicant "should obtain a variance from the City of Riverside before performing any noisy construction activities beyond the hours designated in the City Noise Ordinance." (FIS, p. 12-16.) Waivers of the City Noise Ordinance would not mitigate noise impacts that occur during sensitive noise hours. Therefore, construction noise impacts that occur between 10 PM and 7 AM are significant.

B. The Wrong Significance Threshold Was Used

The Final IS calculated a 5 dBA increase due to project construction and concluded that it was insignificant. However, a 5 dBA increase would ordinarily be considered to be a significant noise impact because it represents a doubling of the sound levels. This threshold is widely used to determine the significance of noise impacts for purposes of CEQA. In particular, in many

other siting cases the Commission has assumed operational noise impacts were significant if the increase in noise is 5 dBA or greater.[29]

However, the Final IS states that construction "will occur only on weekdays between the hours of 7 a.m. and 7 p.m., and Saturdays between 8 a.m. and 5 p.m.…. Because construction noise is temporary in nature and construction activities will occur during daytime hours, the noise effect of plant construction is considered to be insignificant." (FIS, p. 12-9.) However, the temporary nature of an impact does not render it insignificant.

C. Temporary Noise Impacts Are Significant

The Final IS states that noise due to construction "is usually considered to be insignificant" if "the construction activity is temporary." (FIS, p. 12-7.) The FIS estimated that construction would increase ambient noise levels by 5 dBA, but stated that this increase is not significant because "construction noise is temporary in nature…" (FIS, p. 12-7.) CEQA does not grant any exemptions for significant impacts that are temporary. To the contrary, the FIS itself includes an excerpt from the State CEQA Guidelines checklist which identifies a significant impact as "a substantial temporary or periodic increase in ambient noise levels…." (FIS, p. 12-8.) This is consistent with the FIS's analysis in other areas, such as construction-related air quality impacts, which are necessarily temporary, but have their own thresholds of significance under CEQA. Further, construction would last 9 months, a significant amount of time. (FIS, p. 12-8.) Counsel for CURE will provide further legal references if necessary.

As a factual matter, the impacts of noise – nuisance, degradation of performance, and a wide range of physiological reactions, including loss of hearing and degradation of sleep – occur on a scale much shorter than the duration of construction. A noted acoustical handbook states: "Long-term effects are measurable in hours, days, or longer, although there is some overlap with the definition of short-term effects. In the long-term category

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[29] Blythe Energy Power Plant Project, November 2000, p. 252; Malburg Generating Station Project, May 2003, p. 259; Contra Cost Unit 8 Power Project, May 2001, pp. 60, 66; Henrietta Peaker Project, March 2002, pp. 99, 105; High Desert Power Project, May 2000, p. 193; Inland Empire Energy Center, pp. 300, 307; Los Esteros Critical Energy Facility Project, July 2002, p. 291; Metcalf Energy Center, September 2001, p. 396 (nighttime noise levels); Palomar Energy Project, August 2003, p. 322; Potrero Unit 7 Project, p. 57; Roseville Energy Park, June 2004, p. 4.6-9; San Joaquin Valley, January 2004, pp. 308, 317; Cosumnes Power Plant Project, September 2003, p. 126 ("past precedent"); Tesla Power Project, June 2004, pp. 417, 418.

are responses such as alteration in rate of secretion into the bloodstream of substances (hormones), so modifying their concentration for hours, days, or longer, with various real or postulated functional consequences." (Harris 1991,[30] p. 25.14.)

The U.S. EPA conducted a comprehensive study of construction noise, specifically because of its well-known significant impacts. (EPA 12/31/71 (attached as Exhibit Q).[31]) In its introduction, the EPA notes: "The thunder of these engines not only degrades the quality of life in our communities but also causes the operators to incur substantial levels of permanent hearing loss." (EPA 12/31/71, (attached as Exhibit Q) p. 1.) The EPA concluded with respect to a typical construction site: "The noise from this site will be sufficiently high to interfere with their conversation most of the day.... Many will either find it more difficult to fall asleep or be awakened during sleep because of construction noise…. Some pedestrians are exposed to levels that could contribute to hearing loss particularly if these people are exposed to high noise levels during other times of the day…. They have no control over the noise nor do they have much respite from it. The argument that construction is temporary has little appeal to people living near a several year project or one series of projects after another located all around them – after all, they argue, life itself is temporary." (EPA 12/31/71, (Exhibit Q) p. 166.)

Construction of the Project will increase the noise by a factor of two (based on staff's calculations) to over a factor of three (based on our calculation in Table 6) along the recreational trail, 790 feet north of the acoustical center of the site. This is a significant noise impact that is simply not mitigated by its temporary nature.

D. *The Construction Noise Level Of 50 dBA Is Not Correct Because All Construction Equipment Was Not Included*

The Applicant estimated the increase of 50 dBA noise on the recreational trail, assuming that only six pieces of equipment would be operating: backhoe, large mobile crane, dozer, grader, scraper, and dump truck. Response to CURE DR 41 and Ap. Table 6.7-7. However, the air pollutant emissions from constructing the Project were based on a much larger construction fleet and a construction schedule, presumably more accurate. (Ap., Appx. C, as updated by Applicant's revised emission

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[30] Cyril M. Harris, Handbook of Acoustical Measurements and Noise Control, 3rd Ed., McGraw-Hill, Inc., New York, 1991.

[31] Bolt, Beranek and Newman, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, U.S. EPA Report NTID300.1, December 31, 1971.

spreadsheets, attached as Ex. B to Sears Testimony.) This additional equipment includes five cranes, a forklift, backhoe loader, vibratory roller, portable compaction roller, two vibratory plate compactors, eight trucks, two bulldozers, among other items. The ambient construction noise level, assuming the same equipment included in the analysis of construction air pollutant emissions, but otherwise adopting the applicant's assumptions, is as follows:

Table 6
Construction Equipment Noise Levels

Equipment[d]	Rating (hp)	Noise Level at 50 ft[a] (dBA)
Crawler Crane- Greater than 300 ton	175-300	89
Crawler Crane- Greater than 200 ton	175-300	87
Crane – Mobile 65 ton	175-300	87
Cranes -Mobile 45 ton	100-175	87
Cranes - Mobile 35 ton	100-175	87
Bulldozer D6H (D8 or larger)	100-175	88[b]
Bulldozer D4C (D8 or larger)	50-100	80
Excavator- Trencher (Cat 320)	50-100	89
Excavator- Earth Scraper	175-300	89[b]
Excavator-Motor Grader (Cat 140H)	100-175	86[b]
Excavator- Backhoe/loader	50-100	83[b]
Excavator – loader (Cat 928G)	50-100	79
Vibratory Roller	100-175	73
Portable Compaction roller	175-300	75
Truck- Water	Onroad	83
Forklift	50-100	79
Dump Truck	Onroad	88[b]
Service Truck- 1 ton	Onroad	83
Truck- Fuel/Lube	Onroad	83
Concrete Pumper Truck	Onroad	85
Tractor Truck 5th Wheel	Onroad	87
Trucks- Pickup ¾ ton	Onroad	83
Trucks- 3 ton	Onroad	80
Diesel Powered Welder	25-50	78
Light Plants	25-50	?
Portable Compaction- Vibratory Plate	25-50	76
Portable Compaction- Vibratory Ram	25-50	76
Articulating Boom Platforms	25-50	?
Pumps	Gasoline	76
Air Compressor 185 CFM	25-50	81
Air Compressor 750 CFM	25-50	81

Concrete Vibrators	25-50	90
Concrete Trowel Machine	25-50	85
Fusion Welder	25-50	?
Portable Power Generators	25-50	78
Ambient Background	-	46
Base Noise Level		100.04
Duty Cycle (50%)[c]		-3.01
Distance Attenuation[c]		-23.97
Barrier Attenuation[c]		-17.5
CONSTRUCTION NOISE LEVEL		**55.55**

[a] U.S. EPA, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, December 31, 1971, Figure 1 and Table IV (Ex. Q) and Federal Register, v. 39, no. 121, July 21, 1974, pp. 22297-22299 (Ex. R).
[b] Application, Table 6.7-7.
[c] Response to CURE Data Request 41.
[d] Equipment size revised per e-mail from Walters to Lany, July 21, 2004 Re: RERC Construction PM10 AQIA.

This table shows that the increase in ambient noise level on the trail would increase from 50 dBA, estimated by the Applicant based on only six pieces of equipment, to 56 dBA, based on the equipment used to estimate construction air emissions. Actual noise levels could be somewhat higher as we were unable to find noise levels for some of the equipment that would be used. Thus, Project construction would increase ambient noise levels from 46 dBA at present, to 56 dBA or by 10 dBA. The Final IS indicates that an increase of 5 to 10 dBA "may be considered significant." (FIS, p. 12-7.) Thus, notwithstanding the FIS's statement that short-term noise impacts are not significant, which is discussed above, this is a significant impact based on the upper end of staff's significance threshold. It is also significant based on the 5 dBA significance threshold used by the CEC in numerous CEQA and other analyses.

E. Barrier Attenuation Was Overestimated

The construction noise analysis assumes that the barrier would reduce ambient noise levels by 17.5 dBA. Response to CURE DR 41. We were unable to reproduce this value and believe that it is high. The practical insertion loss for barriers ranges from 10 to 20 dBA. A value of 17.5 dBA appears to be high for site conditions. The barrier dimensions and geometry (distance from source to barrier and barrier to receptor) were not provided in

any of the documents that we have reviewed. The barrier height differs on the north and south side of the barrier. We are concerned that the height on the south side, which is much higher than on the north side, was used in the barrier calculations. We request that staff provide the basis for the barrier insertion loss assumed in the construction noise analysis and confirm that it is reasonable.

F. Backup Bells Were Not Analyzed

Repetitive, pure-tone noises are generally the most irritating. The backup bells on earth moving equipment are highly irritating and are generally a major cause of noise complaints around construction sites. The Final IS did not acknowledge nor analyze the impact of backup bells. Further, the construction noise levels reported in the Final IS do not include noise from backup bells. As discussed below, these alarms result in significant construction noise impacts that must be mitigated.

For worker safety reasons, the Occupational Safety and Health Standards ("OSHA") require construction vehicles to sound a backup alarm when backing up or to have an observer signal that it is safe to do so. Backup alarms, which are employed on most construction sites, emit a distinct attention-drawing sound at a fixed interval, which has to be audible above the surrounding noise level. (29 C.F.R. § 1926.601 b(4).)

Backup alarms on heavy-duty equipment emit up to 112 dBA at 4 feet (a minimum increment of 5 decibels above ambient noise is typically considered audible).[32,33,34] Standard backup alarms emit a consistently loud noise at a fixed interval regardless of background noise levels and regardless of whether anyone is behind the vehicle. Self-adjusting or manually-adjustable backup alarms, which have settings of 87 and 107 dBA at 4 feet, increase or decrease their volume based on background noise levels, but are only available for smaller equipment such as backhoes or trucks.

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[32] Society of Automotive Engineers, Recommended Practice: Criteria for Backup Alarm Devices, SAE J994, Society of Automotive Engineers, Warrendale, PA.

[33] *See*, *e.g.*, Star Headlight and Lantern, Co., Warning Systems, Backup Alarms, http://www.starheadlight.com/pages/products/baclUp/63000.htm, accessed May 24, 2003, or R.F. Knapp Company, Radar Alarm Systems, http://www.rfknappco.com/web2/products/alarms/, accessed May 24, 2003.

[34] C.J. Schexnayder and J. Ernzen, Mitigation of Nighttime Construction Noise, Vibrations, and Other Nuisances, A Synthesis of Highway Practice, NCHRP Synthesis 218, National Cooperative Highway Research Program, Transportation Research Board, National Research Council, National Academy Press, Washington, DC, 1999.

Assuming a typical backup alarm noise level of 112 dBA at 4 feet, the attenuated noise level on the recreational trail from backup bells alone would be 57 dBA.[35] Thus, backup bells alone would increase the noise along the recreational trail by 11 dBA. These bells are one of the most common causes of annoyance and community complaints from construction activities and are known to cause considerable irritation. This is a significant impact that was not identified in the Final IS.

G. Boulder Removal Not Considered

The site contains a large number of boulders, many of which are too large to haul away. The Application acknowledges that "some blasting may be required during the construction to remove some large boulders at the site. If blasting occurs, the construction noise levels will exceed the CEC threshold. This impact cannot be fully mitigated. " (Ap., p. 205.) The FIS includes PM10 emissions from blasting. (FIS, AQ Tables 10,11.) Thus, noise impacts from boulder blasting are significant.

XI. OPERATIONAL NOISE IMPACTS ARE SIGNIFICANT

The Final IS estimated operational noise impacts at the nearest residence,[36] noise monitoring location LT-1, located 2,870 feet from the nominal acoustical center of the site. This analysis indicates that noise levels would increase by 5 dBA. This impact should be significant, based on previous siting cases. However, since this analysis was prepared, the applicant has re-arranged the site layout. Equipment that was formerly located at the northern end of the site, including the cooling tower and compressors. This would reduce noise impacts at LT-1, but increase them at other sensitive receptors.

A. Wrong Significance Threshold Used

The Final IS concluded that Project operation would increase nighttime noise levels by 5 dBA. However, the Final IS concluded that this "increase would be barely noticeable; staff considers it less than significant impact and finds the project's operational noise levels in compliance with CEQA guidelines." (FIS, p. 12-11.)

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[35] Construction noise from 15 pieces of equipment operating with backup bells, each emitting at 112 dBA at 4 ft: $[10\log(15(10^{11.2}) - 3.01 - 20\log(4/790) - 17.5] = 57.3$ dBA.

[36] Although the FIS claims that LT-1 is the nearest residence, it is not. The nearest residence is actually just 660 feet from the southern boundary of the Project site and is located at 7297 Jurupa Ave.

However, a 5 dBA increase would ordinarily be considered a significant noise impact because it represents a doubling of the sound pressure level. This threshold is widely used to determine the significance of noise impacts for purposes of CEQA. Further, the Commission itself has relied on this threshold in many other siting decisions.[37] Therefore, operational noise impacts are significant.

B. All Noise Sources Were Not Included

The noise analysis for the nearest residential receptor located at LT-1 appears to include only one turbine train, instead of two. Further, it does not include the zero liquid discharge system. Response to CURE Data Request 39, Attach. 5. Thus, noise impacts may be underestimated by about 3 dBA. This would increase Project noise levels to 45 dBA, cumulative noise to 46 dBA, and the change in noise to 7 dBA, based on the noise analyses in the FIS. Thus, ambient noise levels would exceed the City and County nighttime residential significance threshold of 45 dBA (FIS, p. 12-2) and the CEC's significance threshold of 5 dBA. This is a significant impact.

C. Nearest Residential Receptor Not Evaluated

The Final IS evaluated operational noise impacts at what it characterized as the nearest residential receptor. (FIS, p. 12-10 - 11.) The Application indicates that this receptor is the residence at monitoring site LT-1, located 2,870 feet northwest of the site. (Ap., Table 6.7-2 and 6.7-6; Response to CURE Data Request Set 3, Attach. 5.) However, there is an occupied residence at 7297 Jurupa Avenue, about 680 feet from the southern boundary of the site. (Sears Testimony.) This receptor was modeled as the nearest sensitive receptor in the air quality analysis. Therefore, the noise analysis did not evaluate the nearest residential receptor.

The Applicant prepared noise analyses 15 sites based on the previous site plan. (Ap., Table 6.7-6.) Two of these, ST-9, located 1,220 feet southeast of the nominal acoustical center, and ST-7, located 620 south of the nominal acoustical center, bracket the noise impacts that can be expected at this

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[37] Blythe Energy Power Plant Project, November 2000, p. 252; Malburg Generating Station Project, May 2003, p. 259; Contra Cost Unit 8 Power Project, May 2001, pp. 60, 66; Henrietta Peaker Project, March 2002, pp. 99, 105; High Desert Power Project, May 2000, p. 193; Inland Empire Energy Center, pp. 300, 307; Los Esteros Critical Energy Facility Project, July 2002, p. 291; Metcalf Energy Center, September 2001, p. 396 (nighttime noise levels); Palomar Energy Project, August 2003, p. 322; Protrero Unit 7 Project, p. 57; Roseville Energy Park, June 2004, p. 4.6-9; San Joaquin Valley, January 2004, pp. 308, 317; Cosumnes Power Plant Project, September 2003, p. 126 ("past precedent"); Tesla Power Project, June 2004, pp. 417, 418.

residence.[38] The operational noise levels estimated by the applicant at these locations are 60.0 dBA at ST-7 (Maaco) and 52.9 dBA at ST-9 (church). Response to CURE DR 39, Attach. 5 and Ap., Table 6.7-6. Cumulative noise, consisting of project operational noise and existing background (four lowest nighttime hours based on the L90), would be even higher. Thus, operational noise levels alone exceed the nighttime residential standards of both the City of Riverside and Riverside County, based on the previous site plan. (FIS, p. 12-2 and Noise Table 1.) This impact is probably significant, but cannot be evaluated because the Applicant did not measure nighttime noise levels at these two receptors.

The noise impacts at this sensitive receptor would be higher than predicted based on the applicant's noise analysis because the cooling tower and compressors, major noise sources, have been moved closer to this receptor since the applicant's noise analysis was prepared. Therefore, impacts are likely higher than suggested by our bounding calculations.

D. Cumulative Noise Impacts Were Not Analyzed

The Final IS claims that there are no cumulative projects and thus no cumulative noise impacts. (FIS, p. 12-12.) However, as discussed in Section , a number of capital improvement projects are taking place at the adjacent wastewater treatment plant and cogeneration facility that will occur over the next 5-6 years. See Exhibits O and P. This Project would be constructed over the same time frame as the Project. Therefore, cumulative noise impacts would also likely be significant.

[38] The distances are taken from the Response to CURE Data Request 36, Attachment 5. The site locations are taken from the Application, Table 6.7-2.